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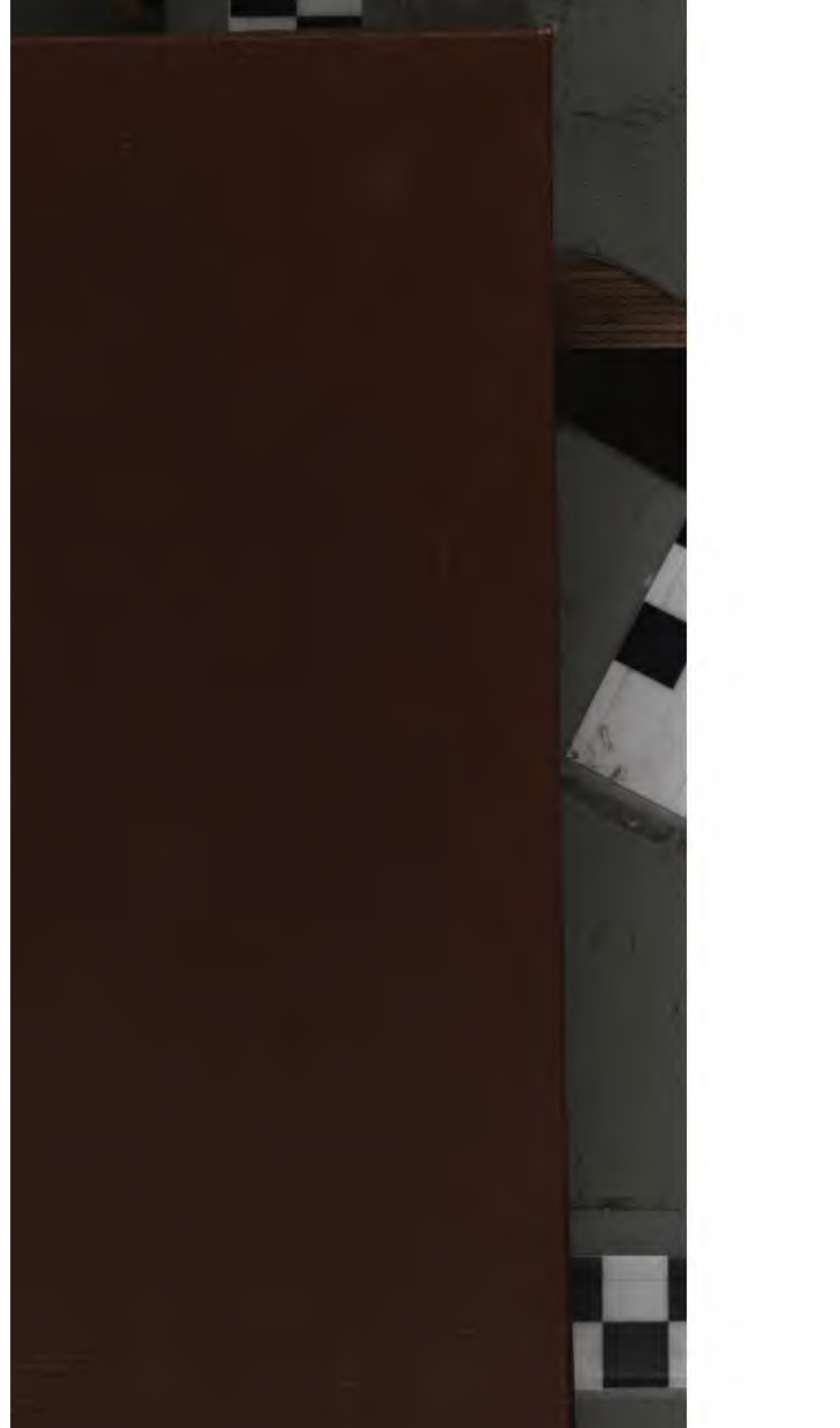
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UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

BULLETIN 558

**RESULTS OF SPIRIT LEVELING
IN WYOMING**

1896 TO 1912, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER



WASHINGTON
GOVERNMENT PRINTING OFFICE

1914

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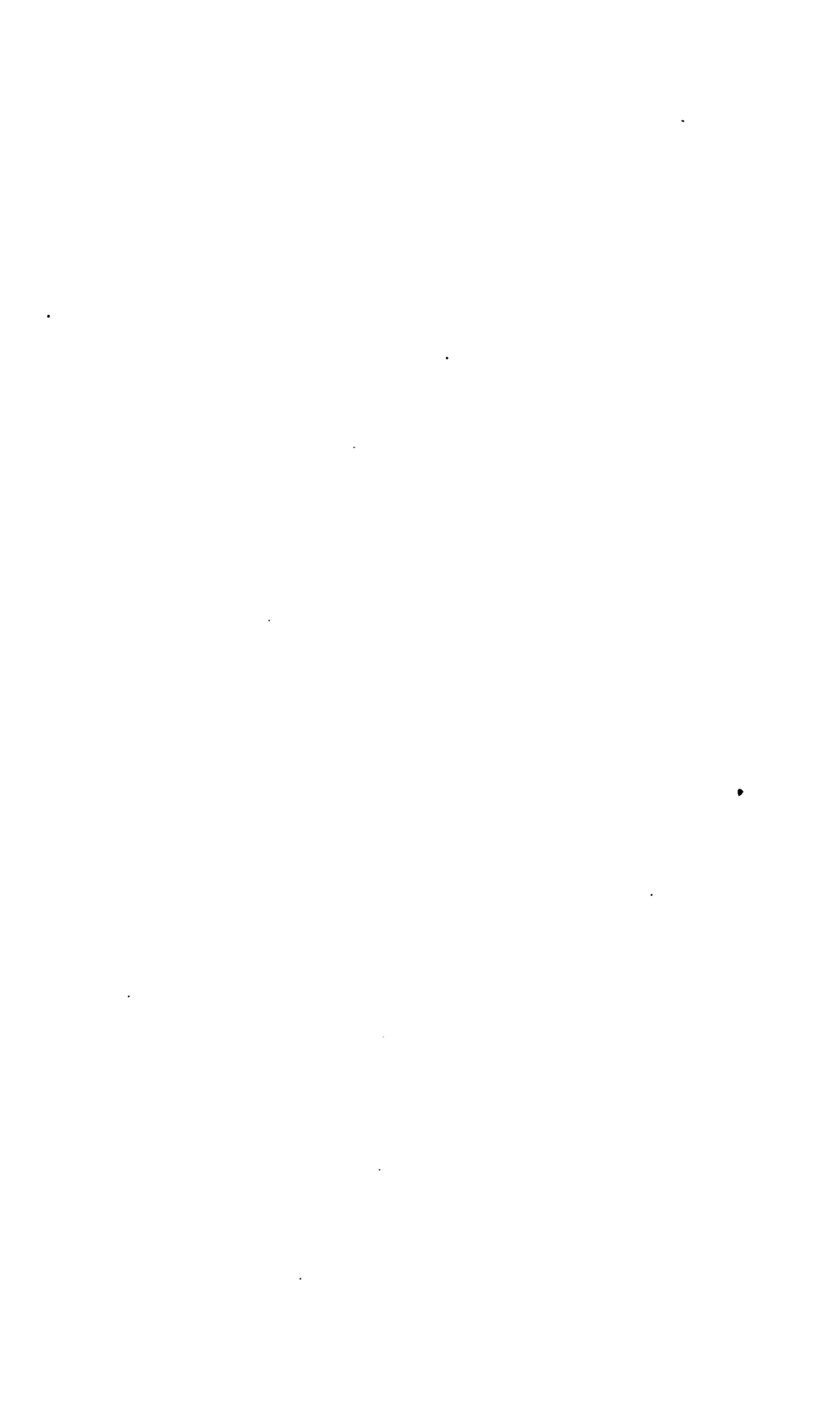
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CONTENTS.

| | Page |
|--|------|
| Introduction | 5 |
| Scope of the work..... | 5 |
| Personnel..... | 5 |
| Classification..... | 5 |
| Bench marks..... | 5 |
| Datum..... | 6 |
| Topographic maps..... | 7 |
| Primary leveling | 7 |
| Cheyenne, Chugwater, Egbert, Goshen Hole, Hartville, Patrick, and Sherman quadrangles (Albany and Laramie counties)..... | 7 |
| Encampment Special, Grand Encampment, Laramie, and Medicine Bow quadrangles (Albany and Carbon counties)..... | 17 |
| Hanna quadrangle (Carbon County)..... | 25 |
| Walcott quadrangle (Carbon County)..... | 28 |
| Alcova, Casper, Douglas, Ferris, Fort Steele, Glenrock, and Leo quadrangles (Carbon, Converse, and Natrona counties)..... | 32 |
| Baggs, Rawlins, and Savery Creek 30' quadrangles (Carbon County)..... | 39 |
| Aladdin, Devils Tower, Moorcroft, Newcastle, and Sundance quadrangles (Crook and Weston counties)..... | 41 |
| Bald Mountain, Cloud Peak, Dayton, Fort McKinney, No Wood, Rairden, and Sheridan quadrangles (Big Horn, Johnson, and Sheridan counties)..... | 51 |
| Cheney, Cody, Embar, Franc Peak, Frannie, Fremont Peak, Grand Teton, Gros Ventre, Kinnear, Kirwin, Lenore, Lovell, Mount Leidy, Otto, Riverton, Sunshine, Thermopolis, Victor, and Younts Peak 30' quadrangles and Meeteetse and Oregon Basin 15' quadrangles (Big Horn, Fremont, and Lincoln counties)..... | 68 |
| Hlo quadrangle (Big Horn County)..... | 94 |
| Almond, Badlands, Daniel, Francis, Granger, Green River (name not final), Lander, Leckie, Newfork, Rock Springs, South Pass, Table Mountain, and Viola quadrangles (Fremont, Sweetwater, and Lincoln counties)..... | 96 |
| Aspen Mountains, Maxon, South Bitter Creek, Bridger, Cokeville, Evanston, Montpelier, Randolph, Saleratus Pass, and Twin Buttes quadrangles (Sweetwater, Lincoln, and Uinta counties)..... | 108 |
| Crow Creek and Freedom quadrangles (Lincoln County)..... | 117 |
| Appendix A: Elevations adjusted by the Coast and Geodetic Survey from precise leveling | 119 |
| Appendix B: Secondary elevations | 138 |
| Index | |

ILLUSTRATION.

| | |
|---|---|
| PLATE I. Geological Survey bench marks | 8 |
|---|---|







GEOLOGICAL SURVEY BENCH MARKS.

A, Tablet used in cooperating States. The State name is inserted at *G*.
B and *D*, Copper temporary bench mark, consisting of a nail and copper washer.
A, *C*, and *E*, Tablets for stone or concrete structures.
F, Iron post used where there is no rock.

RESULTS OF SPIRIT LEVELING IN WYOMING, 1896 TO 1912, INCLUSIVE.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Scope of the work.—All results of spirit leveling in Wyoming previously published by the United States Geological Survey and all the results of later work are included in this report, rearranged by quadrangles. All elevations are based on 1912 adjustment heights of bench marks along the precise-level lines of the Coast and Geodetic Survey.

Personnel.—The field work from 1896 to 1906, inclusive, was done under the general direction of E. M. Douglas, geographer; that for 1907 to 1909, inclusive, under E. C. Barnard, geographer; and the later work under Sledge Tatum, geographer, under the general direction of R. B. Marshall, chief geographer. The names of the respective levelmen are given in the introductions to the several lists. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, and D. H. Baldwin, topographer, and since 1907 under the general direction of E. M. Douglas, geographer.

Classification.—No precise leveling has been done by the United States Geological Survey in this State. For primary lines standard Y levels are used; lines are run in circuits or are closed on precise lines, with an allowable closing error in feet represented by $0.05\sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given the work to maintain this standard. For circuit closures careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (C and E, Pl. I), 3.5 inches in diameter and one-quarter inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock, in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (F, Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post 3.5 inches in outer diameter and 4 feet in length. The bottom is spread out to a

width of 10 inches, in order to give a firm bearing on the earth. A bronze or aluminum-bronze cap is riveted over the top of the post, which is set about 3 feet in the ground. A third style of bench mark with abbreviated lettering (*B* and *D*, Pl. I) is used for unimportant points. This consists of a special copper nail 1.5 inches in length driven through a copper washer $\frac{1}{4}$ inch in diameter. The tablets, as well as the caps on the iron posts, are appropriately lettered, and State cooperation is indicated by the addition of the State name (*6*, Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot as determined by the levelman. These numbers are stamped with $\frac{1}{8}$ -inch steel dies on the tablets or post caps, to the left of the word "FEET." The office adjustment of the notes and the reduction to mean sea-level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey, at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of winds and tides were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions, such as long, narrow bays, rivers, and like features, will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea level as determined from observations in the Atlantic Ocean, the Gulf of Mexico, or the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "DATUM" on tablets or posts. For such areas corrections for published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

Topographic maps.—Maps of the following quadrangles, wholly or partly in Wyoming, have been published by the United States Geological Survey up to November 1, 1913. They may be obtained, except as noted, for 10 cents each or \$3 for 50, on application to the Director of the Survey, at Washington, D. C.

Aladdin (Wyo.-S. Dak.-Mont.).
 Bald Mountain.
 Canyon.¹
 Cloud Peak.
 Coalville (Utah-Wyo.).
 Crandall.
 Dayton.
 Devils Tower.
 Encampment special (Wyo.-Colo.).
 Fort McKinney.
 Fort Steele.
 Fremont Peak.
 Gilbert Peak (Utah-Wyo.).
 Gallatin.¹
 Goshen Hole (Wyo.-Nebr.).
 Grand Teton.
 Gros Ventre.
 Hartville.
 Hayden Peak (Utah-Wyo.).

Ishawooa.
 Kirwin.
 Lake.¹
 Laramie.
 Marsh Peak (Utah-Wyo.).
 Medicine Bow (Wyo.-Colo.).
 Montpeller (Idaho-Wyo.-Utah).
 Mount Leidy.
 Newcastle (Wyo.-S. Dak.).
 Oregon Basin.
 Patrick (Wyo.-Nebr.).
 Rock Springs.
 Sheridan (Wyo.-Mont.).
 Sherman.
 Shoshone.¹
 Sundance (Wyo.-S. Dak.).
 Yellowstone National Park (Wyo.-
 Mont.-Idaho).¹ 40 cts.
 Younts Peak.

PRIMARY LEVELING.

Cheyenne, Chugwater, Egbert, Goshen Hole, Hartville, Patrick, and Sherman quadrangles.

ALBANY AND LARAMIE COUNTIES.

The elevations in the following list are based on 1912 adjustment heights of bench marks of Coast and Geodetic Survey precise-level lines crossing this area.

The leveling in Cheyenne quadrangle was done in 1896 by M. C. McFarland and in 1911 by H. C. Caldwell; in Egbert, Chugwater, Goshen Hole, Hartville, and Patrick quadrangles in 1896 and 1897, by McFarland; in Sherman quadrangle in 1902 by M. S. Bright and in 1903 by G. Stubblefield.

¹ Yellowstone National Park map includes Canyon, Gallatin, and parts of Lake and Shoshone sheets, together with a strip along the tops and the left sides of these combined sheets. A former edition having the same title was simply a combination of the four sheets mentioned.

CHEYENNE QUADRANGLE.

[Latitude 41°-41° 30'; longitude 104° 30'-105°.]

From Cheyenne northeast along highway to sec. 2, T. 16 N., R. 64 W. (double roaded line).

| | Feet. |
|---|-----------|
| Cheyenne, in front of Union Station; top of rail | 6,062.0 |
| Cheyenne, at south front of Capitol in top step: bronze tablet stamped "6101" (Same as C. & G. S. b. m. E.) | 6,097.65 |
| Cheyenne, north side of boulevard, 66 feet west of Odd Fellows Hall; iron post stamped "6118" | 6,114.53 |
| T. 14 N., R. 66 W., quarter corner on south side of sec. 5; iron post stamped "6124" | 6,130.38 |
| T. 15 N., R. 66 W., northeast corner of sec. 29; iron post stamped "6162" | 6,087.95 |
| Pole Creek, north side of, at road crossing; iron post stamped "6117" | 6,013.515 |
| T. 16 N., R. 65 W., northeast corner of sec. 29; iron post stamped "6161" | 6,027.574 |
| T. 16 N., R. 64 W., southwest corner of sec. 3; iron post stamped "5729" | 5,724.845 |

From Cheyenne southwest along Fort Collins trail, Union Pacific Railroad, and Colorado & Southern Railway, thence east along township line between Tps. 16 and 17 N., thence north on line between Rs. 64 and 65, thence west on parallel between Tps. 16 and 17 N., thence south on line between Rs. 66 and 67 to Cheyenne.

| | |
|---|-----------|
| Cheyenne, 36 feet north of center line of main track, in top of southwest corner of stone foundation under first pair of steel supports to viaduct across the Union Pacific R. R., inside of park; bottom of square cut, lettered "U. S. B. M." (C. & G. S. b. m. B.) | 6,060.300 |
| Fort Russell Military Reserve, southeast corner of, corner being center of sec. 1, T. 13 N., R. 67 W., said stone being about 200 feet north of Union Pacific R. R. and about 150 feet west of Colorado & Southern Ry.; iron hub in concrete, marked "U. S. M. R." | 6,095.24 |
| Laramie County Home for the Poor, about 800 feet southwest of, on Fort Collins trail southwest from Cheyenne across Spring Creek, on top of concrete culvert at northwest corner; bottom of square cut, lettered "U. S. B. M." | 6,096.44 |
| Cheyenne, 3.5 miles from, 20 feet east of edge of road; top of rock, marked "6211" | 6,210.79 |
| Cheyenne, 3.5 miles from, on Fort Collins trail, at top of hill southwest of Laramie County Home for the Poor, in turn of road to southwest, about 1,000 feet south of northwest corner of sec. 13, T. 13 N., R. 67 W., 34 feet from telephone pole 4548 numbered from Denver; iron post stamped "6204" | 6,203.980 |
| Deep Ravine, 6 miles from Cheyenne; iron stake on west side of grade of Colorado & Southern Ry., at north end of grade across Deep Ravine, marked "6298" | 6,298.22 |
| T. 13 N., R. 67 W., southeast corner of sec. 33; iron post stamped "6371" | 6,371.118 |
| T. 13 N., R. 67 W., southeast corner of sec. 34; highest point of rock at section corner, marked "6326" | 6,325.79 |
| T. 13 N., R. 67 W., southeast corner of sec. 35; highest point of rock at section corner, marked "6303" | 6,303.70 |

| | Feet. |
|---|------------|
| T. 13 N., R. 67 W., southeast corner of sec. 36; iron post stamped "6226"----- | 6, 225.968 |
| T. 13 N., R. 66 W., southeast corner of sec. 31; highest point of rock, marked "6172"----- | 6, 171.78 |
| T. 13 N., R. 66 W., southeast corner of sec. 32; highest point of rock, marked "6179"----- | 6, 179.69 |
| T. 13 N., R. 66 W., southeast corner of sec. 33; iron post stamped "6237"----- | 6, 236.999 |
| T. 13 N., R. 66 W., southeast corner of sec. 34; highest point of rock, marked "6166"----- | 6, 166.31 |
| T. 13 N., R. 66 W., southeast corner of sec. 38; highest point of rock, marked "6137"----- | 6, 137.68 |
| T. 13 N., R. 66 W., southeast corner of sec. 36; iron post stamped "6118"----- | 6, 118.064 |
| T. 13 N., R. 65 W., southeast corner of sec. 31; highest point of rock, marked "6054"----- | 6, 053.87 |
| T. 13 N., R. 65 W., southeast corner of sec. 32; highest point of rock, marked "5969"----- | 5, 968.79 |
| T. 13 N., R. 65 W., southeast corner of sec. 33; iron post stamped "5906"----- | 5, 906.264 |
| T. 13 N., R. 65 W., southeast corner of sec. 36; iron post stamped "5813"----- | 5, 813.263 |
| T. 13 N., R. 65 W., southeast corner of sec. 25; highest point of rock, marked "5839"----- | 5, 888.88 |
| T. 13 N., R. 65 W., southeast corner of sec. 13; iron post stamped "5886"----- | 5, 886.708 |
| T. 13 N., R. 65 W., southeast corner of sec. 12; highest point of rock, marked "5833"----- | 5, 833.07 |
| T. 13 N., R. 65 W., southeast corner of sec. 1; highest point of rock, marked "5831"----- | 5, 831.72 |
| T. 14 N., R. 65 W., southeast corner of sec. 36; iron post stamped "5784"----- | 5, 784.306 |
| T. 14 N., R. 65 W., southeast corner of sec. 25; highest point of rock, marked "5880"----- | 5, 859.86 |
| T. 14 N., R. 65 W., southeast corner of sec. 24; highest point of rock, marked "5880"----- | 5, 880.47 |
| T. 14 N., R. 65 W., southeast corner of sec. 13; iron post stamped "5899"----- | 5, 868.948 |
| T. 14 N., R. 64 W., sec. 6, in front of station at Durham; top of rail on Union Pacific R. R.----- | 5, 831.07 |
| T. 15 N., R. 65 W., southeast corner of sec. 36; iron post stamped "5836"----- | 5, 836.426 |
| T. 15 N., R. 65 W., southeast corner of sec. 25; highest point of stone, marked "5798"----- | 5, 798.06 |
| T. 15 N., R. 65 W., southeast corner of sec. 24; highest point of stone, marked "5820"----- | 5, 819.94 |
| T. 15 N., R. 65 W., southeast corner of sec. 13; iron post stamped "5905"----- | 5, 805.024 |
| T. 15 N., R. 65 W., southeast corner of sec. 12; highest point of rock, marked "5777"----- | 5, 777.12 |
| T. 15 N., R. 65 W., southeast corner of sec. 1; highest point of rock, marked "5888"----- | 5, 888.09 |

| | Feet. |
|--|-----------|
| T. 16 N., R. 65 W., southeast corner of sec. 36; iron post stamped "5904" ----- | 5,904.314 |
| T. 16 N., R. 65 W., southeast corner of sec. 13; iron post stamped "5859" ----- | 5,859.023 |
| T. 16 N., R. 64 W., 450 feet east of center of sec. 8; nail at bottom of seventh post east of corner of fence, marked "5778" ----- | 5,777.82 |
| T. 16 N., R. 64 W., southeast corner of sec. 4; iron post stamped "5729" (probably stamped incorrectly) ----- | 5,724.825 |
| T. 17 N., R. 65 W., southeast corner of sec. 36; iron post stamped "5808" ----- | 5,807.780 |
| T. 17 N., R. 65 W., southeast corner of sec. 35; highest point of rock, marked "5829" ----- | 5,829.22 |
| T. 17 N., R. 65 W., southeast corner of sec. 34; highest point of rock, marked "5874" ----- | 5,874.55 |
| T. 17 N., R. 65 W., southeast corner of sec. 33; iron post stamped "5890" ----- | 5,889.826 |
| T. 17 N., R. 65 W., southeast corner of sec. 32; highest point of rock, marked "5923" ----- | 5,922.77 |
| T. 17 N., R. 65 W., southeast corner of sec. 31; highest point of rock, marked "5979" ----- | 5,979.58 |
| T. 17 N., R. 66 W., southeast corner of sec. 36; iron post stamped "6035" ----- | 6,035.184 |
| T. 17 N., R. 66 W., southeast corner of sec. 33; iron post stamped "6124" ----- | 6,125.103 |
| T. 17 N., R. 66 W., southeast corner of sec. 32; highest point of rock, marked "6189" ----- | 6,189.00 |
| T. 17 N., R. 66 W., southeast corner of sec. 31; highest point of rock, marked "6254" ----- | 6,253.65 |
| T. 17 N., R. 67 W., southeast corner of sec. 36; iron post stamped "6276" ----- | 6,276.15 |
| T. 16 N., R. 67 W., southeast corner of sec. 1; highest point of rock, marked "6276" ----- | 6,275.92 |
| T. 16 N., R. 67 W., near southeast corner of sec. 12; spike in 13th post south of gate, marked "6279" ----- | 6,278.74 |
| T. 16 N., R. 67 W., southeast corner of sec. 13; iron post stamped "6244" ----- | 6,243.899 |
| T. 16 N., R. 66 W., 600 feet south by 900 feet east of northwest corner of sec. 30, in deep ravine; top of large rock, marked "6205" ----- | 6,205.00 |
| T. 16 N., R. 67 W., southeast corner of sec. 25, 350 feet south of; railway spike, marked "6147" ----- | 6,147.29 |
| T. 16 N., R. 67 W., southeast corner of sec. 36; iron post stamped "6189" ----- | 6,189.005 |
| T. 15 N., R. 67 W., southeast corner of sec. 1; highest point of rock, marked "6219" ----- | 6,219.15 |
| T. 15 N., R. 67 W., southeast corner of sec. 12; highest point of rock, marked "6214" ----- | 6,213.73 |
| T. 15 N., R. 67 W., southeast corner of sec. 13; iron post stamped "6176" ----- | 6,176.185 |
| T. 15 N., R. 67 W., southeast corner of sec. 24; highest point of rock, marked "6189" ----- | 6,189.88 |
| T. 15 N., R. 66 W., in NW. $\frac{1}{4}$ sec. 30, at northwest corner of South Snyder windmill post office ranch; iron pin marked "6177" ----- | 6,177.60 |

| | Feet. |
|--|-------------|
| T. 15 N., R. 67 W., southeast corner of sec. 36; iron post stamped "6216"----- | 6, 216. 209 |
| T. 14 N., R. 67 W., 1,200 feet west of corner of sec. 1; iron pin near large rock, marked "6223"----- | 6, 223. 54 |
| T. 14 N., R. 67 W., 300 feet east of quarter corner south side of sec. 12; iron pin marked "6220"----- | 6, 220. 08 |
| T. 14 N., R. 67 W., southeast corner of sec. 13; iron post stamped "6142"----- | 6, 142. 702 |
| T. 14 N., R. 67 W., southeast corner of sec. 24; iron pin near rock, marked "6157"----- | 6, 156. 96 |

The following bench mark was established in connection with the primary leveling done on the Eaton quadrangle, Colorado, in 1906, by W. R. Winstead:

| | Feet. |
|---|-------------|
| Athol, in northeast corner of yard to railroad section house; iron post stamped "6303, Denver, 1906"----- | 6, 302. 350 |

CHUGWATER QUADRANGLE.

[Latitude 41° 30'-42°; longitude 104° 30'-105°.]

Bench marks established near public-land corners (on single spur line).

| | |
|---|-------------|
| T. 22 N., R. 64 W., northwest corner of sec. 4; iron post stamped "4426"----- | 4, 421. 948 |
| T. 22 N., R. 64 W., sec. 6; iron post stamped "4524"----- | 4, 520. 246 |
| T. 22 N., R. 65 W., sec. 4; iron post stamped "4653"----- | 4, 649. 097 |

EGBERT QUADRANGLE.

[Latitude 41°-41° 30'; longitude 104°-104° 30'.]

Bench mark established near public-land corner.

| | |
|--|-------------|
| T. 17 N., R. 63 W., south side of sec. 22; iron post stamped "5638"--- | 5, 634. 118 |
|--|-------------|

GOSHEN HOLE QUADRANGLE.

[Latitude 41° 30'-42°; longitude 104°-104° 30'.]

Bench marks established near public-land corners.

| | |
|---|-------------|
| T. 18 N., R. 62 W., 1,052 feet east of southwest corner of sec. 17; iron post stamped "4983"----- | 4, 980. 045 |
| T. 18 N., R. 62 W., northeast corner of sec. 1; iron post stamped "4984"----- | 4, 979. 812 |
| T. 19 N., R. 62 W., northeast corner of sec. 24; iron post stamped "4904"----- | 4, 900. 247 |
| T. 19 N., R. 61 W., 330 feet east of northwest corner of sec. 6; iron post stamped "4658"----- | 4, 654. 706 |
| T. 20 N., R. 62 W., northeast corner of sec. 24; iron post stamped "4510"----- | 4, 506. 358 |
| T. 20 N., R. 61 W., northwest corner of sec. 6; iron post stamped "4513"----- | 4, 509. 173 |

| | Feet. |
|--|-------------|
| T. 21 N., R. 61 W., northwest corner of sec. 19; iron post stamped "4359"----- | 4, 355. 291 |
| T. 21 N., R. 61 W., northwest corner of sec. 6; iron post stamped "4340"----- | 4, 335. 699 |
| T. 22 N., R. 61 W., northwest corner of sec. 19; iron post stamped "4263"----- | 4, 258. 892 |
| T. 22 N., R. 61 W., northwest corner of sec. 6; iron post stamped "4235"----- | 4, 230. 679 |
| T. 23 N., R. 61 W., northwest corner of sec. 19; iron post stamped "4258"----- | 4, 254. 290 |
| T. 23 N., R. 60 W., southeast corner of sec. 10; iron post stamped "4038"----- | 4, 034. 645 |
| T. 23 N., R. 60 W., southeast corner of sec. 34; iron post stamped "4064"----- | 4, 060. 679 |
| T. 23 N., R. 60 W., southwest corner of sec. 31; iron post stamped "4244"----- | 4, 240. 613 |
| T. 23 N., R. 61 W., southwest corner of sec. 34; iron post stamped "4242"----- | 4, 238. 202 |
| T. 22 N., R. 62 W., northwest corner of sec. 3, south of rock; iron post stamped "4250"----- | 4, 246. 553 |
| T. 22 N., R. 62 W., northwest corner of sec. 6; iron post stamped "4299"----- | 4, 295. 035 |
| T. 22 N., R. 63 W., northwest corner of sec. 3; iron post stamped "4370"----- | 4, 366. 242 |
| T. 22 N., R. 63 W., northwest corner of sec. 6; iron post stamped "4420" (on single spur line)----- | 4, 416. 301 |
| T. 21 N., R. 60 W., northeast corner of sec. 3, Wyoming-Nebraska State line; iron post stamped "4256 Chyn" (on spur line)----- | 4, 252. 335 |
| T. 21 N., R. 61 W., northeast corner of sec. 1; iron post stamped "4225 Chyn." (on single spur line)----- | 4, 220. 989 |
| T. 21 N., R. 61 W., northeast corner of sec. 4; iron post stamped "4318 Chyn." (on single spur line)----- | 4, 314. 215 |

Circuit west 12 miles, thence north 6 miles.

| | |
|--|-------------|
| T. 21 N., R. 62 W., northwest corner of sec. 3; iron post stamped "4338 Chyn"----- | 4, 334. 578 |
| T. 21 N., R. 62 W., northwest corner of sec. 6; iron post stamped "4430 Chyn"----- | 4, 426. 308 |
| T. 21 N., R. 63 W., northwest corner of sec. 3; iron post stamped "4430 Chyn"----- | 4, 426. 486 |
| T. 21 N., R. 63 W., northwest corner of sec. 6; iron post stamped "4515 Chyn"----- | 4, 511. 638 |

Single spur line east 9 miles.

| | |
|--|-------------|
| T. 23 N., R. 63 W., northwest corner of sec. 3; iron post stamped "4257 Chyn"----- | 4, 253. 496 |
|--|-------------|

Near Torrington.

| | |
|---|-------------|
| T. 23 N., R. 63 W., northwest corner of sec. 19; iron post stamped "4815 Chyn"----- | 4, 311. 515 |
|---|-------------|

HARTVILLE QUADRANGLE.

[Latitude 42°-42° 30'; longitude 104° 30'-105°.]

Single spur line west 9 miles.

| | Feet. |
|--|-----------|
| T. 23 N., R. 64 W., northwest corner of sec. 8; iron post stamped "4360 Chyn"----- | 4,855.772 |
| T. 23 N., R. 64 W., northwest corner of sec. 6; iron post stamped "4408 Chyn"----- | 4,898.690 |
| T. 23 N., R. 65 W., northwest corner of sec. 8; iron post stamped "4599 Chyn"----- | 4,594.915 |

Line west to Wheatland.

| | |
|---|-----------|
| T. 24 N., R. 64 W., northwest corner of sec. 4; iron post stamped "4694 Chyn"----- | 4,690.142 |
| T. 24 N., R. 65 W., quarter corner north side of sec. 2; iron post stamped "4930 Chyn"----- | 4,928.090 |
| T. 24 N., R. 65 W., quarter corner north side of sec. 6; iron post stamped "5032 Chyn"----- | 5,027.518 |
| Eagles Nest, 270 feet northeast of, at intersection of roads; iron post stamped "5011 Chyn"----- | 5,006.572 |
| Laramie River, on west side of abandoned road to, 650 feet south of crossing of Eagles Nest Creek bed; iron post stamped "4687 Chyn"----- | 4,682.491 |
| T. 24 N., R. 66 W., 2,800 feet southeast of northwest corner of sec. 10, west side of Chugwater road; iron post stamped "4552 Chyn"----- | 4,547.627 |
| Wheatland station, Colorado & Southern Ry., base of rail east-side of; iron post stamped "4737 Chyn" (redetermined by Coast and Geodetic Survey)----- | 4,733.173 |

PATRICK QUADRANGLE.

[Latitude 42°-42° 30'; longitude 104°-104° 30'.]

Bench marks established near public-land corners.

| | |
|---|-----------|
| T. 23 N., R. 61 W., sec. 6; iron post stamped "4314"----- | 4,310.463 |
| T. 24 N., R. 61 W., sec. 19; iron post stamped "4220"----- | 4,215.677 |
| T. 24 N., R. 61 W., quarter corner west side of sec. 7; iron post stamped "4110"----- | 4,105.762 |
| T. 23 N., R. 61 W., northwest corner of sec. 1; iron post stamped "4183"----- | 4,178.674 |
| T. 23 N., R. 62 W., northwest corner of sec. 6; iron post stamped "4201 Chyn"----- | 4,197.338 |
| T. 23 N., R. 62 W., northwest corner of sec. 3; iron post stamped "4177 Chyn"----- | 4,172.930 |
| T. 23 N., R. 63 W., northwest corner of sec. 6; iron post stamped "4309 Chyn"----- | 4,305.478 |
| T. 24 N., R. 63 W., northwest corner of sec. 19; iron post stamped "4346 Chyn"----- | 4,342.776 |
| T. 24 N., R. 63 W., northwest corner of sec. 6; iron post stamped "4655 Chyn"----- | 4,651.438 |
| T. 24 N., R. 63 W., northwest corner of sec. 3; iron post stamped "4443 Chyn"----- | 4,439.566 |
| T. 24 N., R. 62 W., northwest corner of sec. 6; iron post stamped "4228 Chyn"----- | 4,224.300 |

| | Feet. |
|--|-------------|
| T. 24 N., R. 62 W., northwest corner of sec. 3; iron post stamped "4133 Chyn"----- | 4, 129. 571 |

Single spur line north 9 miles to Fort Laramie.

| | |
|---|-------------|
| T. 25 N., R. 63 W., northwest corner of sec. 19; iron post stamped "4376 Chyn"----- | 4, 372. 316 |
| T. 25 N., R. 63 W., northwest corner of sec. 6; iron post stamped "4211 Chyn"----- | 4, 207. 270 |
| T. 26 N., R. 64 W., northwest corner of sec. 28; iron post stamped "4263 Chyn"----- | 4, 258. 592 |

SHERMAN QUADANGLE.

[Latitude 41°-41° 30'; longitude 105°-105° 30'.]

From Brennagans Springs, Colo., northward via Haley ranch to Otto.

| | |
|--|-------------|
| T. 12 N., R. 69 W., sec. 14, 2.5 miles west of Brennagans Springs, forks in road; iron post stamped "6735 Denver"----- | 6, 733. 087 |
| T. 12 N., R. 69 W., sec. 8, 0.5 mile south of Upper Duck Creek ranch, top of ridge, northeast and southwest, in road forks; iron post stamped "7184 Denver"----- | 7, 182. 226 |
| T. 13 N., R. 69 W., sec. 33, 2.5 miles northeast of Upper Duck Creek ranch, top of ridge east-west, 14 feet south of road; iron post stamped "7189 Denver"----- | 7, 137. 239 |
| Otto siding, 300 feet east of water tank, 100 feet south of railroad track, 6 feet east of gate; iron post stamped "6945 Denver"----- | 6, 943. 239 |

From Otto west along road to Sherman.

| | |
|--|-------------|
| T. 13 N., R. 69 W., sec. 17, 1.2 miles east of Granite Canyon, 75 feet west of wagon road and railroad crossing, at fence corner; iron post stamped "7234 Denver"----- | 7, 232. 222 |
| Granite Canyon, north side of track, southwest corner of section house; stone post marked "U.S. B.M." (C. & G. S. b. m. H)----- | 7, 313. 158 |
| T. 13 N., R. 70 W., sec. 18, 1 mile west of Granite Canyon, top of hill, north of road, at wire fence; iron post stamped "7439 Denver"----- | 7, 437. 520 |
| T. 13 N., R. 70 W., 0.2 mile east of corner of secs. 9, 10, 15, and 16, 1 mile east of Ozone, 75 feet south of road, on top of rock knoll; iron post stamped "7689"----- | 7, 667. 118 |
| Buford, 8 feet east of station, 60 feet south of railroad track; iron post stamped "7984"----- | 7, 862. 269 |
| T. 14 N., R. 71 W., sec. 33, 3.5 miles west of Buford, 20 feet north of road opposite old gravel pit; iron post stamped "8132 Denver"----- | 8, 130. 256 |
| T. 13 N., R. 71 W., sec. 6, at Old Sherman, northeast corner of Ames monument (C. & G. S. b. m. J.)----- | 8, 281. 837 |

From Sherman northwest along road via Ames monument to southwest corner of sec. 13, T. 14 N., R. 72 W., thence east via Latta ranch and Heckla to point near Hummon's ranch.

| | |
|--|-------------|
| T. 14 N., R. 72 W., near northeast corner of sec. 14, 4.2 miles north of Old Sherman, top of ridge, 500 feet south of gate and road forks, east side of road; iron post stamped "8511 Denver"----- | 8, 509. 053 |
| T. 14 N., R. 71 W., sec. 17, 0.5 mile east of Blair's ranch, 80 feet northwest of summit, in granite rock; bronze tablet stamped "8131 Denver"----- | 8, 129. 208 |

| | Feet. |
|---|------------|
| T. 14 N., R. 71 W., sec. 22, 1 mile west of Golden ranch, 1,000 feet west of road forks, north of road, in flat-topped granite rock; bronze tablet stamped "8063 Denver"----- | 8,061. 215 |
| T. 14 N., R. 70 W., sec. 31, 2.2 miles east of Golden ranch, 150 feet south of road, in top of granite butte; aluminum tablet stamped "7739 Denver"----- | 7,737. 340 |
| T. 14 N., R. 70 W., sec. 28, 3.5 miles west of Hecla, 800 feet west of gate and road forks, top of ridge, 100 feet north of road, at wire fence; iron post stamped "7517 Denver"----- | 7,515. 241 |
| Hecla, at east side of road, at fence corner, 65 feet south of post-office building; iron post stamped "6756 Denver"----- | 6,754. 271 |
| T. 14 N., R. 69 W., sec. 22, 0.2 mile south of Gilchrist ranch house, 150 feet north of intersection of Happy Jack and Silver Crown roads, at fence corner; iron post stamped "6544 Denver"----- | 6,542. 193 |
| T. 14 N., R. 69 W., sec. 2, 1 mile north of Nimmon's ranch house, east of old road and gate on fence line east-west, between secs. 2 and 11, T. 14 N., R. 69 W.; iron post stamped "6526 Denver"----- | 6,524. 433 |
| T. 15 N., R. 69 W., in sec. 15, 12 feet north of milepost 21, 35 feet east of Colorado & Southern Ry. track (C. & G. S. b. m. Z)----- | 6,749. 825 |
| From milepost 21 on Colorado & Southern Railway west to Cheyenne Pass, thence south to southwest corner of Sec. 12, T. 14 N., R. 72 W. | |
| T. 15 N., Ra. 69 and 70 W., 480 feet south of corner of secs. 7, 12, 13, and 18, 1 mile southeast of William Lanner's ranch house, on divide, 200 feet west of old road; iron post stamped "7018 Denver"----- | 7,016. 252 |
| T. 15 N., R. 70 W., sec. 10, 2.2 miles west of Lanner's ranch, north of road, 4 feet north of gate; iron post stamped "7282 Denver"----- | 7,280. 123 |
| T. 15 N., R. 70 W., 3 feet east of corner of secs. 7, 8, 17, and 18, 1 foot south of gate, 1 mile northeast of Carroll's ranch house; iron post stamped "7646 Denver"----- | 7,644. 460 |
| T. 15 N., R. 71 W., 17 feet south of gate on line between secs. 14 and 15, at crossroads, 0.8 mile north of William Ferguson's ranch house; iron post stamped "7892 Denver"----- | 7,890. 210 |
| T. 15 N., R. 71 W., near southwest corner sec. 17, 2 miles east of Jack Gill's ranch house, top of ridge, 50 feet southeast of road forks; iron post stamped "8287 Denver"----- | 8,285. 087 |
| T. 15 N., R. 72 W., sec. 23, 0.8 mile west of Jack Gill's ranch house, at Cheyenne Pass, summit in gap, 75 feet north of road; iron post stamped "8591 Denver"----- | 8,589. 245 |
| Crow Creek Hill triangulation station, 7.8 miles north of Sherman, top of hill under signal, 500 feet west of Sherman-Laramie road, in sandstone outcrop; bronze tablet stamped "8878 Denver"----- | 8,875. 786 |
| From Cheyenne Pass west along road to southeast corner of sec. 18, T. 15 N., R. 72 W., thence north to southeast corner of sec. 31, T. 16 N., R. 72 W., thence northeast along road to Baker ranch. | |
| T. 16 N., R. 72 W., sec. 28, 7 miles east of Laramie, top of divide, 30 feet south of road; iron post stamped "8480 Denver"----- | 8,478. 444 |
| T. 16 N., R. 72 W., sec. 23, 2.9 miles southwest of Richardson's ranch house, at top of hill, 29 feet north of road; iron post stamped "8343 Denver"----- | 8,341. 660 |
| T. 16 N., R. 71 W., sec. 18, 85 feet west of Richardson's ranch house, in top of bowlder; bronze tablet stamped "7832 Denver"----- | 7,830. 325 |

Feet.

T. 16 N., R. 71 W., sec. 4, 215 feet east of house on Baker ranch, 35 feet south of road, about 60 feet southeast of road forks, in top of dark granite rock 2 by 2 feet at ground and 15 inches high; aluminum tablet stamped "7658 Denver"----- 7, 657. 034

From Baker ranch east along road to vicinity of Horse Creek station.

T. 17 N., R. 71 W., sec. 33, 500 feet west of Mrs. Fullerton's house, 50 feet north of road, in vertical face of granite boulder 1 foot above ground; aluminum tablet stamped "7528 Denver"----- 7, 524. 522

Tps. 16 and 17 N., Ra. 70 and 71 W., 15.5 feet northeast of standard township corner, 3 miles east of Mrs. Fullerton's house, 4.5 feet north of wire fence, 600 feet north of road, in top of granite boulder 5 inches above ground; aluminum tablet stamped "7433 Denver"--- 7, 431. 405

T. 17 N., R. 70 W., sec. 34, 2.8 miles west of Horse Creek station, 300 feet east of gate, 25 feet south of road, in top of boulder, 1 foot above ground; aluminum tablet stamped "7140 Denver"----- 7, 138. 974

From Horse Creek station east along road to Whittaker's ranch, thence south to Lodgepole Creek and west to vicinity of Islay.

T. 17 N., R. 70 W., sec. 25, 1,000 feet east of Horse Creek station, north of east-west road, west of north-south road 4 feet north by 1 foot east of fence corner; iron post stamped "6494 Denver"----- 6, 492. 419

T. 17 N., R. 69 W., sec. 20, 2 miles northeast of Horse Creek station, 0.8 mile north of Chimney Rock, 120 feet south of road, 3 feet northwest of wire fence corner; iron post stamped "6613 Denver"--- 6, 611. 226

T. 17 N., R. 69 W., sec. 22, 5 miles east of Horse Creek station, 0.3 mile north of Whittaker ranch house, 30 feet south of road, 2 feet north of intersection of north-south fence with east-west fence; iron post stamped "6487 Denver"----- 6, 485. 861

T. 17 N., R. 68 W., sec. 19, 7.5 miles east of Horse Creek station, 0.2 mile north of Whittaker ranch house, 12 feet south of road, 2 feet north of corner of wire fence; iron post stamped "6357"----- 6, 355. 686

Tps. 16 and 17 N., secs. 4 and 33, 900 feet east of quarter corner on township line, 2.5 feet northwest of west gate post of wire gate in east-west fence; iron post stamped "6702 Denver"----- 6, 699. 909

T. 16 N., R. 68 W., southeast corner of sec. 8, 4 feet north of, 1 mile north of Pole Creek, 2 feet north of fence corner; iron post stamped "6716 Denver"----- 6, 714. 614

T. 16 N., R. 69 W., sec. 24, 1,000 feet southwest of Hasmon ranch house, 400 feet southwest of Pole Creek, 150 feet north of wire fence, in granite boulder 2 feet 6 inches by 2 feet 2 inches at ground and 2 feet high; aluminum tablet stamped "6603 Denver"----- 6, 601. 278

T. 16 N., R. 69 W., sec. 28, 0.2 mile west of Van Tassel's ranch house, 800 feet south of Pole Creek, 10 feet north of road, 4 feet west of north gate post, gate in north-south fence at intersection of east-west fence; iron post stamped "6671 Denver"----- 6, 669. 603

Islay, 50 feet east of track, in line of telegraph poles, 10 feet north of first telegraph pole south of Islay; Coast and Geodetic Survey bench mark A, marked "U. S. \square G. S."----- 6, 705. 246

Islay, 2 miles west by 1 mile south of, 2 feet south of township corner between Tps. 15 and 16 N. and Ra. 69 and 70 W., 4 feet south of wire fence, 250 feet east of gate in east-west fence; iron post stamped "6850 Denver"----- 6, 848. 000

Encampment Special, Grand Encampment, Laramie, and Medicine Bow quadrangles.

ALBANY AND CARBON COUNTIES.

The elevations in the following list result from a line of levels run from Coast and Geodetic Survey bench mark N at Laramie, southwest to Pinkhampton, Colo., thence northwest to Encampment, Wyo. The initial bench mark is a cross cut in the top of a copper bolt in northwest corner of foundation of courthouse at Laramie, and its elevation is accepted as 7,166.547 feet. The line from Laramie to Encampment was run in duplicate in the forward direction by Goynes Drummond and E. W. Glafcke, in 1901, and the mean of the two values adopted. Starting from the bench mark thus established at Encampment, Donnell Miller completed the leveling for the Encampment Special quadrangle in 1901.

Additional leveling in Laramie quadrangle was done in 1903 by G. Stubblefield and in Grand Encampment and Medicine Bow quadrangles in 1904 by R. W. Wieland.

ENCAMPMENT SPECIAL QUADRANGLE.

[Latitude 41°-41° 15'; longitude 106° 45'-107° 15'.]

From Encampment west along public road through Battle and Rambler to Copperton.

| | Feet. |
|---|-------------|
| Encampment, 8 feet west of Encampment Commercial Co.'s store, at edge of sidewalk; iron post stamped "7322 Laramie"----- | 7, 323. 482 |
| T. 14 N., R. 84 W., sec. 10, 2 miles west of Encampment, 30 feet north of road, in ledge of rock; aluminum tablet stamped "7798 Laramie"----- | 7, 790. 384 |
| Encampment, 5.5 miles west of, in SE. $\frac{1}{4}$ sec. 18, T. 14 N., R. 84 W., 60 feet north of post office at Elwood, in solid rock; bronze tablet stamped "8502 Laramie"----- | 8, 503. 389 |
| T. 14 N., R. 85 W., sec. 27, 3.5 miles southwest of Elwood 5 feet north of road, in quartzite ledge; bronze tablet stamped "9387 Laramie"----- | 9, 388. 092 |
| Battle, at southeast corner of Main and Second streets, in large stone set in the ground; aluminum tablet stamped "9806 Laramie"----- | 9, 866. 930 |
| Rambler, at southwest corner of Main and Second streets, in granite stone; bronze tablet stamped "9232 Laramie"----- | 9, 233. 010 |
| T. 14 N., R. 86 W., sec. 33, 3.8 miles west of Rambler, 3.5 miles east of Copperton, in quartzite rock 15 feet north of road; bronze tablet stamped "9038 Laramie"----- | 9, 038. 867 |
| Copperton, at southeast corner of Chicago and Fourth streets, in sandstone; bronze tablet stamped "8357 Laramie"----- | 8, 358. 367 |

From Copperton via forks of Battle Creek, Kenney sheep pens, and Love's cabin to Hog Park.

| | |
|--|-------------|
| T. 13 N., R. 87 W., sec. 10, 3 miles southwest of Copperton, 20 feet north of road, in quartzite rock; bronze tablet stamped "8291 Laramie"----- | 8, 291. 935 |
|--|-------------|

| | Feet. |
|--|-------------|
| T. 13 N., R. 87 W., sec. 22, 50 feet east of crossing of South Fork of Battle Creek, 10 feet south of road, in stone; aluminum tablet stamped "7211 Laramie"----- | 7, 212. 051 |
| T. 13 N., R. 87 W., sec. 25, 3.3 miles southeast of forks of Battle Creek, just west of top of divide to Roaring Fork of Snake River. 75 feet north of road, in sandstone; bronze tablet stamped "8075 Laramie"----- | 8, 076. 117 |
| T. 12 N., R. 86 W., sec. 4, 0.7 mile east of Kenney's dipping pens, 10 feet south of road, in rock; aluminum tablet stamped "7822 Laramie"----- | 7, 823. 306 |
| T. 12 N., R. 86 W., sec. 1, 300 feet east of Love's cabin, 25 feet south of road, in sandstone ledge; bronze tablet stamped "8225 Laramie"----- | 8, 225. 910 |
| T. 13 N., R. 85 W., sec. 32, on divide between Solomon Creek and North Fork of Snake River, 30 feet north of road, in gneiss rock; bronze tablet stamped "8844 Laramie"----- | 8, 845. 349 |
| NOTE.—Wagon road ends here. Follow pack trail in green pine over divide into Hog Park. | |
| T. 12 N., R. 85 W., sec 2, 6.5 miles east of Love's cabin, 10 feet north of point where trail crosses Continental Divide into Hog Park, in sandstone; bronze tablet stamped "9171 Laramie"----- | 9, 172. 320 |
| Top of Divide. 3.2 miles east of, southwest corner of sec. 5, T. 12 N., R. 84 W., 600 feet north of, in sandstone; bronze tablet stamped "8380 Laramie"----- | 8, 381. 089 |

From Hog Park along Encampment River to Encampment.

| | |
|---|-------------|
| T. 12 N., R. 84 W., quarter section corner to secs. 3 and 10, 60 feet north of, in sandstone; bronze tablet stamped "8202 Laramie"--- | 8, 203. 308 |
| T. 13 N., R. 84 W., sec. 26, 70 feet west of river, at point where trail comes in from west side, in sandstone; bronze tablet stamped "7947 Laramie"----- | 7, 948. 366 |
| T. 13 N., R. 84 W., in NW. $\frac{1}{4}$ sec. 1, in Huston town site. 30 feet south of Thomas Madden's house on east bank of river, in sandstone; bronze tablet stamped "7403 Laramie"----- | 7, 404. 412 |
| T. 14 N., R. 84 W., sec. 12, 50 feet east of Boshore's house on west bank of river, in gneiss rock; bronze tablet stamped "7213 Laramie"----- | 7, 214. 753 |

From point 6.3 miles southwest of Copperton (at forks of Battle Creek) along road down creek to Colorado State line.

| | |
|---|-------------|
| Forks of Battle Creek, 3 miles southwest of, in SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 30, T. 13 N., R. 87 W., at northeast corner of Gibson's house, in sandstone; bronze tablet stamped "7000 Laramie"----- | 7, 001. 069 |
| Colorado-Wyoming State line, 8 miles southwest of, near forks of Battle Creek, at Salisbury's ranch, on Snake River, in sandstone at mouth of Battle Creek; bronze tablet stamped "6703 Laramie"--- | 6, 704. 232 |

GRAND ENCAMPMENT QUADRANGLE.

[Latitude 41°-41° 30'; longitude 106° 30'-107°.]

From Ten Mile ranch via French post office to Jefferson Brown's ranch.

| | |
|--|-------------|
| Ten Mile ranch, 200 feet northwest of bridge, 200 feet west of North Brush Creek. 40 feet northeast of road; iron post stamped "7901 Laramie"----- | 7, 902. 880 |
|--|-------------|

| | Feet. |
|--|-------------|
| Dewey Mine, 0.2 mile south of, 30 feet west of Hill Line Canal, in ledge of gneiss; aluminum tablet stamped "7793 Laramie"----- | 7, 794. 887 |
| Francis ranch and Brush Creek, 0.4 mile west of, 200 feet east of irrigation ditch, 150 feet north of road, in ledge of gneiss; aluminum tablet stamped "7709 Laramie"----- | 7, 710. 425 |
| Bennett post office, 2 miles east of, 30 feet from northwest corner of W. Condict's house, 15 feet south of road; iron post stamped "7406 Laramie"----- | 7, 407. 489 |
| French post office, 4.3 miles northwest of, 1 mile north of Cottonwood Creek, 10 feet east of road at summit of hill, in rock; aluminum tablet stamped "7720 Laramie"----- | 7, 721. 583 |
| Harry Moore's house, 0.2 mile west of, 10 feet west of road, in rock ledge; aluminum tablet stamped "7343 Laramie"----- | 7, 344. 570 |
| Elijah Moore's ranch house, 0.5 mile northeast of, 0.5 mile northeast of French post office, 40 feet west of road, in ledge of gneiss; aluminum tablet stamped "7434 Laramie"----- | 7, 435. 008 |
| From point 2 miles northeast of Bennett post office through Saratoga to point 3.1 miles north of Saratoga. | |
| W. Condict's ranch house, 3.3 miles northwest of, 30 feet west of road, on summit of hill, in gneiss ledge; aluminum tablet stamped "7523 Laramie"----- | 7, 524. 778 |
| Ridding's mail box, 0.5 mile northeast of, 800 feet northwest of Elk Creek, in gneiss ledge; aluminum tablet stamped "7083 Laramie"----- | 7, 084. 431 |
| Ryan's ranch, 0.6 mile northeast of, 15 feet east of road; iron post stamped "7049 Laramie"----- | 7, 050. 410 |
| J. G. Davis's ranch house, 600 feet southeast of, 10 feet south of road and gate; iron post stamped "6868 Laramie"----- | 6, 869. 404 |
| Davis's ranch house, 3.8 miles north of, 25 feet north of road and gate; iron post stamped "6815 Laramie"----- | 6, 816. 297 |
| Saratoga, 2 squares east of bridge over Platte River, at northeast corner of cross streets, 3 feet west of telephone pole; iron post stamped "6785 Laramie"----- | 6, 786. 258 |
| Saratoga, 3.1 miles north of, 150 feet west of Scribner's ranch house, 10 feet east of road, 6 feet south of telephone pole; iron post stamped "6774 Laramie"----- | 6, 775. 207 |
| From Jenkins's ranch house along highways to point 4.4 miles west of Hunter's ranch. | |
| J. H. Jenkins's ranch house, 0.8 mile west of, 300 feet west of French Creek bridge, 10 feet north of road, in rock; aluminum tablet stamped "7486 Laramie"----- | 7, 488. 619 |
| Jackson Brown's house, 500 feet east of, NE. $\frac{1}{4}$ sec. 1, T. 14 N., R. 82 W., 60 feet northeast of road, in diorite ledge; aluminum tablet stamped "7286 Laramie"----- | 7, 287. 651 |
| Jackson Brown's house, 3 miles south of, 10 feet east of road, in gneiss ledge; aluminum tablet stamped "7679 Laramie"----- | 7, 680. 602 |
| Jackson Brown's house, 6.1 miles south of, 10 feet east of road on hillside in granite outcrop; aluminum tablet stamped "7752 Laramie"----- | 7, 754. 596 |
| Hunter's ranch, 4.4 miles west of, 500 feet north of cabin, 30 feet north of road; iron post stamped "7692 Laramie"----- | 7, 693. 288 |
| From Big Creek ranch northwest along highways to Encampment. | |
| Big Creek ranch, west gate of, 1 mile west of buildings, at forks of road; iron post stamped "7704 Laramie"----- | 7, 705. 248 |

| | Feet. |
|---|-------------|
| Hunter's ranch, 4.4 miles northwest of, in Bear Creek basin, 30 feet north of road, 500 feet north of cabin: iron post stamped "7692 Laramie"----- | 7, 693. 286 |
| Downington, corner of store building; iron post stamped "7486 Laramie"----- | 7, 487. 210 |
| Downington, 2 miles west of, 20 feet north of road, 50 feet northwest of telephone pole 2291, in bowlder; bronze tablet stamped "7540 Laramie"----- | 7, 541. 153 |
| Downington, 6.7 miles west of, 30 feet south of sandstone ledge, 120 feet west of Cherokee Creek: aluminum tablet stamped "7383 Laramie"----- | 7, 383. 684 |

LARAMIE QUADRANGLE

[Latitude 41°-41° 30'; longitude 105° 30'-106°.]

From Laramie southwest along highways to Woods post office.

| | |
|---|-------------|
| Laramie, northwest corner of courthouse, in foundation; aluminum tablet stamped "7164"----- | 7, 164. 826 |
| Laramie, 3 miles southwest of, T. 15 N., R. 74 W., sec. 1, 0.2 mile south of University farmhouse, left side of road: iron post stamped "7174 Laramie"----- | 7, 175. 232 |
| T. 15 N., R. 74 W., sec. 15, 6 miles southwest of Laramie, south side of county road, 2 feet north of buck fence, south of telephone pole 200; iron post stamped "7182 Laramie"----- | 7, 183. 344 |
| T. 15 N., R. 74 W., sec. 29, 9 miles southwest of Laramie, north side of road, 80 feet due south of Hutton Grove schoolhouse: iron post stamped "7204 Laramie"----- | 7, 205. 320 |
| T. 14 N., R. 75 W., sec. 2, 12.1 miles southwest of Laramie, top of ridge 3 miles southwest of Hutton Grove schoolhouse, close to buck fence; iron post stamped "7252 Laramie"----- | 7, 253. 265 |
| T. 14 N., R. 75 W., sec. 9, 15 miles southwest of Laramie, 50 feet north of county road, 10 feet north of telephone pole 500; iron post stamped "7276 Laramie"----- | 7, 277. 033 |
| T. 14 N., R. 76 W., sec. 24, 18 miles southwest of Laramie, ranch on south side of road, 100 feet south of telephone pole 612; iron post stamped "7313 Laramie"----- | 7, 314. 039 |
| T. 14 N., R. 76 W., sec. 27, 21 miles southwest of Laramie, 0.2 mile east of lake, northwest side of road, 10 feet south of telephone pole 720; iron post stamped "7366 Laramie"----- | 7, 367. 023 |
| T. 14 N., R. 77 W., near northeast corner of sec. 36, 24 miles southwest of Laramie, 10 feet north of road, at telephone pole 726; iron post stamped "7421 Laramie"----- | 7, 422. 156 |
| T. 15 N., R. 72 W., corner of secs. 17, 18, 19, and 20, 7 miles southeast of Laramie, 200 feet north of road; iron post stamped "7802 Denver"----- | 7, 800. 100 |
| Tps. 15 and 16 N., R. 72 W., 45 feet west of stone at corner of secs. 5, 6, 31, and 32, on ridge east-west, 5 miles east of Laramie; aluminum tablet stamped "7751 Denver"----- | 7, 749. 368 |
| From Laramie north to Wyoming, thence west to Old Wyoming, to Sprague's lane, thence south and east to Laramie. | |
| Soda triangulation station, on east side of iron post: ground----- | 7, 259. 2 |
| Laramie, 3 miles north of, 2.75 feet west of intersection of east-west fence on east side of road parallel to Union Pacific R. R. track, nearly opposite second brick house north of brewery; iron post stamped "7184 Laramie"----- | 7, 185. 211 |

| | Feet. |
|--|-------------|
| Antelope triangulation station, on east side of stone monument; ground ----- | 7, 229. 0 |
| T. 17 N., R. 73 W., sec. 32, about 0.25 mile west of northeast corner of, 6.5 miles north of Laramie, about 1 mile southeast of Howell, east side of road, 2.5 feet west of fence corner; iron post stamped "7142 Laramie" ----- | 7, 143. 492 |
| T. 17 N., R. 73 W., sec. 7, 45.5 feet west of northeast corner, 1.75 feet east of fence on west side of road; iron post stamped "7182 Laramie" ----- | 7, 133. 052 |
| T. 18 N., R. 73 W., sec. 31, 71 feet west of northeast corner of, 12.5 miles from Laramie, 2.5 feet east of fence on west side of road; iron post stamped "7157 Laramie" ----- | 7, 158. 292 |
| T. 17 N., R. 74 W., north side of, on fence line, 1 mile west by north of Wyoming, 3,000 feet west of Union Pacific R. R.; iron post stamped "7148 Laramie" ----- | 7, 149. 087 |
| Old Wyoming, on Haley ranch, foundation of water tower, in north-east corner of, 10 inches from ground; aluminum tablet stamped "7075 Laramie" ----- | 7, 075. 702 |
| Old Wyoming, 3.5 miles west by north of, 1,000 feet north of Four Mile Creek, east side of Sprague's lane, at west side of Haley ranch, 4.5 feet northwest of intersection of north-south fence with east-west fence; iron post stamped "7136 Laramie" ----- | 7, 137. 143 |
| T. 17 N., R. 75 W., sec. 3, southeast corner of, west side of Sprague's lane, at top of hill, 2.25 feet east of intersection of east-west fence with north-south fence; iron post stamped "7242 Laramie" ----- | 7, 242. 595 |
| T. 17 N., R. 75 W., sec. 26, about 1,600 feet north of southwest corner of, east side of road, 5 feet west of intersection of east-west with north-south fence; iron post stamped "7127 Laramie" ----- | 7, 128. 046 |
| T. 16 N., R. 75 W., southwest corner of sec. 1, southwest side of road at oblique fence corner; iron post stamped "7159 Laramie" ----- | 7, 160. 211 |
| T. 16 N., R. 74 W., sec. 10, near southwest corner of, north side of road, at top of hill, County Road triangulation station; iron post stamped "7359 Laramie" ----- | 7, 360. 448 |
| T. 16 N., R. 74 W., sec. 36, 68 feet south of northwest corner of, 3.5 miles west of Laramie, 100 feet south of railroad cut, 100 feet north of road; iron post stamped "7260 Laramie" ----- | 7, 261. 149 |
| From Old Wyoming west to James Lake, thence southwest via Phillips, Empire, and Coughlin ranches to Hatton, thence east to Laramie. | |
| T. 17 N., R. 76 W., sec. 2, 1.5 feet west of northeast corner, 0.5 mile south of Terence Fee's ranch house; iron post stamped "7236 Laramie" ----- | 7, 237. 395 |
| T. 17 N., R. 76 W., sec. 21, near quarter corner on west side of, 1.25 miles southwest of Phillips's ranch house, 2.75 feet east of fence, 6 feet south of gate post; iron post stamped "7303 Laramie" ----- | 7, 304. 446 |
| T. 16 N., R. 76 W., sec. 12, near southeast corner of, intersection of fences on range line, 2 miles south of Empire Land & Cattle Co.'s ranch house; iron post stamped "7224 Laramie" ----- | 7, 225. 157 |
| T. 16 N., R. 76 W., sec. 28, 65 feet south of northwest corner of, about one-half mile east of Coughlin ranch, 2 feet southeast of south gate-post, 1 foot west of intersection of east-west with north-south fence; iron post stamped "7370 Laramie" ----- | 7, 370. 995 |

| | Feet. |
|---|-------------|
| Hatton, T. 15 N., R. 76 W., sec. 6, near southwest corner of, 400 feet east of road summit, north side of Centennial stage road; iron post stamped "7695 Laramie"----- | 7, 695. 808 |
| T. 15 N., R. 76 W., near southeast corner of sec. 3, on Big Hollow Centennial road, on top of ridge west of large basin, 8.5 feet west of signpost "Left Hand Ridge Road"; iron post stamped "7716 Laramie"----- | 7, 717. 601 |
| T. 15 N., R. 75 W., sec. 6, 6.5 feet east of southwest corner of; iron post stamped "7333 Laramie"----- | 7, 334. 059 |
| T. 15 N., R. 75 W., sec. 12, north side of, 6 feet south of quarter corner; iron post stamped "7145 Laramie"----- | 7, 146. 034 |
| <i>From Woods Landing road southwest to Lindsay's ranch house, thence northeast to Laramie.</i> | |
| T. 13 N., R. 76 W., sec. 12, 4.5 feet south of northwest corner of, 2 miles southwest of Bacon ranch house, 10 feet south of east gatepost; iron post stamped "7283 Laramie"----- | 7, 284. 326 |
| T. 13 N., R. 76 W., sec. 22, 0.25 mile west of center of, 125 feet southwest of road forks, road branching to Jelm from north fork of road that passes through Bacon ranch; iron post stamped "7522 Laramie"----- | 7, 522. 983 |
| T. 12 N., R. 76 W., sec. 6, 6 feet west of quarter corner on east side of, 900 feet west of Lindsay's ranch house, about 120 feet south of road, 10 feet north of intersection of east-west and north-south fences; iron post stamped "7825 Laramie"----- | 7, 826. 542 |
| T. 12 N., R. 76 W., sec. 12, 600 feet east by 500 feet south of northwest corner of, 20 feet northeast of crossroads; iron post stamped "7585 Laramie"----- | 7, 585. 880 |
| Payne ranch, T. 12 N., R. 75 W., sec. 5, southwest corner of, on hill 6 feet south of intersection of east-west with north-south fence; iron post stamped "7547 Laramie"----- | 7, 547. 837 |
| T. 13 N., R. 75 W., sec. 28, 200 feet south of northwest corner of, 7 feet northwest of oblique fence corner, southeast side of road; iron post stamped "7422 Laramie"----- | 7, 423. 098 |
| T. 13 N., R. 75 W., sec. 2, 40 feet west of southeast corner of, 40 feet northeast of gate on southeast side of road; iron post stamped "7315 Laramie"----- | 7, 315. 603 |
| T. 14 N., R. 74 W., sec. 29, near center of; iron post stamped "7334 Laramie"----- | 7, 335. 185 |
| T. 14 N., R. 74 W., sec. 10, 0.25 mile south of northeast corner of, 4 feet northwest of northeast gatepost; iron post stamped "7258 Laramie"----- | 7, 259. 448 |
| Homer's ranch, 1.25 miles north by 0.5 mile east of, 0.25 mile east of Five Mile Creek, on Laramie and North Fork road, 9 feet north of oblique fence corner on southeast side of road; iron post stamped "7239 Laramie"----- | 7, 240. 337 |
| Laramie, 3.25 miles south of, 0.25 mile south of Fort Sanders, 120 feet north of railroad crossing, on west side of road, 4.5 feet east of railroad fence; iron post stamped "7180 Laramie"----- | 7, 181. 086 |
| <i>From Steamboat Lake east and northeast to Sportsman Lake, thence northerly via Homer ranch to point 6.5 miles south and 2 miles west of Laramie.</i> | |
| T. 12 N., R. 74 W., sec. 6, 9.5 feet south of northwest corner of, 300 feet west of gate for road to Chimney Rock, 2 miles south of Lin ranch house; iron post stamped "7418 Laramie"----- | 7, 419. 185 |

| | Feet. |
|---|-------------|
| T. 12 N., R. 74 W., sec. 10, 0.33 mile north by 0.2 mile east of southwest corner of, 50 feet northeast of road forks, 10 feet southeast of road; iron post stamped "7979 Laramie"----- | 7, 990. 560 |
| T. 13 N., R. 74 W., sec. 27, 0.25 mile north by 0.5 mile east of southwest corner of, 100 feet northeast of crossroads, 0.75 mile east of Johnston's ranch house; iron post stamped "7586 Laramie"----- | 7, 586. 759 |
| T. 13 N., R. 74 W., sec. 15, 0.25 mile east of northwest corner of, 65 feet northeast of crossroads, at south gate of Homer's ranch; iron post stamped "7444 Laramie"----- | 7, 444. 783 |
| T. 14 N., R. 73 W., sec. 31, near quarter corner on south side of, 10 feet east of road forks, 50 feet north of stone; iron post stamped "7428 Laramie"----- | 7, 429. 145 |
| T. 14 N., R. 73 W., sec. 29, quarter corner south side of, 121 feet west of; iron post stamped "7406 Laramie"----- | 7, 407. 377 |
| Red Butte, 9 miles south of Laramie, 600 feet southwest of station, on west side of road, 4 feet southeast of gatepost and gate for road to Homer's ranch house; iron post stamped "7304 Laramie"----- | 7, 304. 912 |

From Sportsman Lake southeast 6 miles, thence southwest to T. 13 N.,
R. 74 W., sec. 10.

| | |
|--|-------------|
| T. 13 N., R. 73 W., sec. 16, 25 feet south of road; iron post stamped "7519 Laramie"----- | 7, 520. 038 |
| T. 13 N., R. 73 W., sec. 13, quarter corner west side of, 30 feet south of fence corner on south side of Tie siding and North Park road, 15 feet east of road forks; iron post stamped "7560 Laramie"----- | 7, 561. 340 |
| Ranch house, 0.75 mile southwest of, south side of road, 100 feet south of creek, 550 feet east of bridge over creek; iron post stamped "8029 Laramie"----- | 8, 030. 485 |
| Gale triangulation station----- | 8, 669. 043 |
| Gale, 2.25 miles southwest of, large granite rock on southeast side of road; aluminum tablet stamped "8727 Laramie"----- | 8, 729. 106 |

MEDICINE BOW QUADRANGLE.

[Latitude 41°-41° 30'; longitude 106°-106° 30'.]

From Woods post office southwest along highways to Big Creek ranch.

| | |
|--|-------------|
| Woods post office, 27 miles west of Laramie, 50 feet north of saloon, at forks of road; iron post stamped "7461 Laramie"----- | 7, 462. 239 |
| T. 13 N., R. 77 W., sec. 17, 3.1 miles southwest of Woods post office, top of ridge at edge of same, 25 feet north of Mountain county road; iron post stamped "8502 Laramie"----- | 8, 503. 228 |
| T. 13 N., R. 77 W., sec. 19, top of mountain, in timber, at forks of road, 50 feet north of telephone pole 1145; iron post stamped "8887 Laramie"----- | 8, 888. 156 |
| T. 13 N., R. 78 W., sec. 34, top of range, near telephone pole 1302, in heavy timber, on left side of road; iron post stamped "9173 Laramie"----- | 9, 174. 297 |
| Mountain Home, 0.5 mile east of post office, at forks of road to American Mine, 50 feet west of mail box, 40 feet east of telephone pole 1435; iron post stamped "8775 Laramie"----- | 8, 776. 388 |
| T. 12 N., R. 80 W., 20 feet north of county road, 0.2 mile east of small creek; iron post stamped "7920 Laramie"----- | 7, 921. 234 |
| T. 13 N., R. 81 W., sec. 35, 15 feet north of road, at telephone pole 2869, on sage brush flat; iron post stamped "7746 Laramie"----- | 7, 747. 194 |

From Hatton along highways west through Centennial and Holmes to point
0.8 mile west of J. H. Jenkins's ranch house.

Feet.

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|---|-------------|
| T. 15 N., R. 77 W., sec. 9, 750 feet south of James Hay's ranch house, south of road, 5 feet north of gate entrance to pasture; iron post stamped "7667 Laramie"----- | 7, 668. 638 |
| T. 15 N., R. 77 W., sec. 18, 55 feet west of Halls Bridge over Little Laramie River, south side of road, 6 feet east of gate to pasture; iron post stamped "7732 Laramie"----- | 7, 733. 658 |
| Centennial, at east corner of First Presbyterian Church; iron post stamped "8074 Laramie"----- | 8, 075. 683 |
| T. 15. N., R. 78 W., sec. 26, 300 feet east of Thomas Byrd's house, near gate; iron post stamped "7921 Laramie"----- | 7, 922. 640 |
| T. 14 N., R. 78 W., 150 feet north of J. H. McNealey's house in sec 14; iron post stamped "8106 Laramie"----- | 8, 107. 662 |
| T. 15 N., R. 78 W., sec. 16, 2.2 miles west of John Byrd's ranch house, in granite rock on hill; bronze tablet stamped "9213 Laramie"----- | 9, 214. 625 |
| T. 14 N., R. 79 W., sec. 12, 50 feet west of Ole Oleson's house, 15 feet south of road; iron post stamped "9662 Laramie"----- | 9, 663. 605 |
| T. 14 N., R. 79 W., sec. 3, 0.2 mile west of Douglas Creek Bridge, 0.8 mile west of American Copper Co.'s office, 90 feet south of road; iron post stamped "9428 Laramie"----- | 9, 429. 612 |
| Holmes post office, 500 feet south of granite bowlder, 25 feet north- east of road; aluminum tablet stamped "9548 Laramie"----- | 9, 550. 090 |
| Holmes, 3 miles west of, 15 feet north of road; iron post stamped "9928 Laramie"----- | 9, 929. 607 |
| T. 15 N., R. 80 W., near line between secs. 34 and 35, 15 feet south of road, in rock; aluminum tablet stamped "9701 Laramie"----- | 9, 702. 629 |
| T. 15 N., R. 80 W., sec. 33, 600 feet west of Mullen Creek bridge, 10 feet north of road, in ledge; aluminum tablet stamped "8755 Lar- amie"----- | 8, 756. 544 |
| T. 15 N., R. 81 W., sec. 36, south of road; aluminum tablet stamped "8736 Laramie"----- | 8, 737. 661 |
| T. 15 N., R. 81 W., sec. 34, 12.4 miles west of Holmes, on hillside, 400 feet northwest of junction of road south to Mullen Creek, 50 feet south of road, in quartzite rock; aluminum tablet stamped "7788 Laramie"----- | 7, 789. 761 |

From French Creek south to Platte River, thence via Douglas and Sheep
creeks and Keystone to point 1 mile east of Holmes.

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|---|-------------|
| T. 14 N., R. 81 W., sec. 11, 1.9 miles north of Kennedy's house, 150 feet north of Mullen Creek, 25 feet east of road, in mica schist rock; aluminum tablet stamped "7766 Laramie"----- | 7, 767. 584 |
| T. 14 N., R. 81 W., near southwest corner of sec. 23, 150 feet northeast of Finrock's ranch house, 5 feet east of gate at road; iron post stamped "7380 Laramie"----- | 7, 381. 424 |
| T. 13 N., R. 80 W., sec. 6, 300 feet north of junction of Douglas Creek with Platte River, 20 feet northeast of road, in rock; alumi- num tablet stamped "7419 Laramie"----- | 7, 420. 357 |
| T. 14 N., R. 80 W., sec. 29, 1.3 miles northeast of mouth of Sheep Creek, 50 feet northwest of Sheep Creek, in rock; aluminum tablet stamped "8056 Laramie"----- | 8, 057. 144 |
| T. 14 N., R. 80 W., sec. 27, 3.9 miles northeast of mouth of Sheep Creek, in rock on edge of hill and 25 feet south of trail; aluminum tablet stamped "9254 Laramie"----- | 9, 255. 076 |

| | Feet. |
|--|-------------|
| T. 14 N., R. 80 W., sec. 36, 0.6 mile east of Devil's Gate Creek, at summit of hill, 1.5 miles northeast of Lenhardy's cabin, in granite rock 10 feet north of road; aluminum tablet stamped "9153 Laramie"..... | 9, 154. 890 |
| T. 14 N., R. 79 W., sec. 29, 3.9 miles east of Lenhardy's cabin, 0.5 mile east of summit of hill, 40 feet south of road, in granite rock; aluminum tablet stamped "9399 Laramie"..... | 9, 399. 818 |
| Keystone mine, 800 feet west of, 100 feet south of Douglas Creek, 50 feet southwest of house, 50 feet north of road; iron post stamped "8890 Laramie"..... | 8, 890. 717 |

From point 1 mile east of Holmes via Lake Marie and Gold Hill to Ten Mile ranch.

| | |
|--|--------------|
| T. 15 N., R. 79 W., sec. 28, 2.5 miles north of Camp Douglas, 80 feet north of small stream, 10 feet east of trail, in granite rock; aluminum tablet stamped "9725 Laramie"..... | 9, 726. 684 |
| T. 15 N., R. 79 W., near line between secs. 17 and 18, 5.2 miles northwest of Camp Douglas, 300 feet south of quarter section corner, 150 feet north of Douglas Creek; iron post stamped "9972 Laramie"..... | 9, 973. 669 |
| Camp Douglas, 7.2 miles north of, at corner of secs. 5, 6, 7, and 8, T. 15 N., R. 79 W.; iron post stamped "10330 Laramie"..... | 10, 331. 711 |
| Camp Douglas, 9.8 miles north of, corner of secs. 20, 21, 28, and 29, T. 16 N., R. 79 W., 100 feet south of Centennial Gold Hill road; iron post stamped "10487 Laramie"..... | 10, 487. 694 |
| T. 16 N., R. 80 W., sec. 25, 600 feet south of outlet of Lake Marie, 250 feet southwest of French Creek, in gneiss ledge; aluminum tablet stamped "10483 Laramie"..... | 10, 485. 142 |
| Lake Marie Pass, 0.6 mile southwest of, 200 feet west of crest of hill, 600 feet north of trail to Gold Hill, at quarter section corner; iron post stamped "10900 Laramie"..... | 10, 901. 713 |
| T. 16 N., R. 80 W., sec. 22, 3 miles west of Lake Marie, 0.4 mile west of South Brush Creek crossing, 10 feet north of Gold Hill road; iron post stamped "10020 Laramie"..... | 10, 021. 776 |
| T. 16 N., R. 80 W., sec. 21, 0.8 mile southwest of Gold Hill, in sandstone rock 15 feet north of road; aluminum tablet stamped "9548 Laramie"..... | 9, 549. 735 |
| T. 16 N., R. 81 W., sec. 24, 200 feet east of bridge, 10 feet north of road, in quartzite rock; aluminum tablet stamped "8960 Laramie"..... | 8, 961. 523 |
| T. 16 N., R. 81 W., sec. 21, at old headquarters, 200 feet north of Brush Creek, 20 feet south of road; iron post stamped "8369 Laramie"..... | 8, 370. 848 |

Hanna Quadrangle.

CARBON COUNTY.

The elevations in the following list were determined by primary levels based upon a Coast and Geodetic Survey bench mark at Hanna and accord with the 1912 adjustment.

The leveling was done in 1911 by C. J. Ballinger.

HANNA QUADRANGLE.

[Latitude 41° 45'-42°; longitude 106° 30'-106° 45'.]

From Hanna south along public road to Percy, thence west along old Union Pacific Railroad grade to Dana.

| | Feet. |
|---|-------------|
| Hanna, 425 meters east of water tank on right of way, 90 feet north of center of main track, in line with and about halfway between first and second telegraph poles, east of an angle in line of telegraph poles; bottom of square hole in top of stone post, lettered "U. S. \square B. M." (C. & G. S. I 2)----- | 6, 779. 360 |
| Hanna, 2.2 miles southeast of, north side of Hanna-Elk Mountain road; center of cross cut on small sandstone rock marked "6888"----- | 6, 888. 27 |
| Hanna, 2.4 miles southeast of, east end of north truss of bridge, on Hanna-Elk Mountain road; cross marked "6876"----- | 6, 876. 68 |
| Hanna, 3 miles southeast of, 60 feet northeast of Hanna-Elk Mountain road; center of cross cut on north side of sandstone rock, marked "7015"----- | 7, 015. 03 |
| Hanna, 4.6 miles southeast of, 10 feet south of road, at top of divide; iron post stamped "7284"----- | 7, 284. 367 |
| Old Percy, 90 feet northwest of northwest corner of ranch house; iron post stamped "6969"----- | 6, 969. 132 |
| Old Percy, 2.5 miles west of, middle of Union Pacific R. R. grade; center of cross cut at bottom of fence post on which is tin can nailed to top, marked "6910"----- | 6, 909. 73 |
| Old Percy, 3.6 miles west of, at bottom of fence post in middle of old Union Pacific R. R. grade (post has tin can nailed to top and barrel stave); center of cross cut at bottom of post, marked "6890"----- | 6, 889. 78 |
| Old Percy, 4.5 miles west of, east side of wagon road from Hanna to Kinney's ranch, center of old Union Pacific R. R. grade; iron post stamped "6878"----- | 6, 877. 928 |
| Old Percy, 5.5 miles west of, center of cross cut at bottom of fence post where fence crosses old Union Pacific R. R. grade obliquely; marked "6850"----- | 6, 850. 33 |
| Nelson's ranch, 8 miles west of Old Percy, on old Union Pacific R. R. grade, 200 feet north of ranch house; iron post stamped "6821"----- | 6, 821. 105 |
| Nelson's ranch, 1.24 miles west of, 200 feet south of high bluff, 100 feet east of culvert; on north side of old Union Pacific R. R. grade; cross cut in sandstone rock, marked "6803"----- | 6, 803. 52 |
| Dana, on right of way of Union Pacific R. R., 39 feet from center of main track, at point 1½ rails east of east end of station (burned down); bottom of square hole in top of stone post, lettered "U. S. \square B. M." (C. & G. S. K 2)----- | 6, 792. 185 |

From Hanna northwest along public road to Leo (Brook's mail box), thence east and south along road to Hanna.

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|--|-------------|
| Hanna, 2.1 miles west of, at Stevenson's ranch, 100 feet east of house, 20 feet east of yard fence; center of cross cut on white sandstone boulder, marked "6753"----- | 6, 753. 31 |
| Hanna, 3.8 miles west of, on east side of road from Hanna to Leo, where road goes through saddle; iron post stamped "6869"----- | 6, 868. 800 |
| Hanna, 4.9 miles northwest of, west side of wagon road from Hanna to Leo; center of cross cut on brown sandstone rock, marked "6986"----- | 6, 986. 98 |

| | Feet. |
|--|-------------|
| Hanna, 6.6 miles northwest of, 100 feet west of wagon road from Hanna to Leo; center of cross cut on large sandstone boulder, marked "7005"----- | 7, 004. 80 |
| Hanna, 7.8 miles northwest of, west side of wagon road to Leo, in top of very large white sandstone boulder; bronze tablet stamped "6877"----- | 6, 877. 003 |
| Hanna, 10.7 miles northwest of, 20 feet southwest of wagon road to Leo; center of circle on sandstone rock, marked "6577"----- | 6, 577. 18 |
| Hanna, 11.7 miles northwest of, at Brook's mail box, at road forks, northeast side of road to Leo; iron post stamped "6548"----- | 6, 547. 805 |
| Junction of Leo road with road to Brook's ranch, 1.4 miles east of, on rock ledge, 50 feet south of road to Brook's ranch, under signal; center of cross, marked "6787"----- | 6, 787. 48 |
| Junction of Leo road with road to Brook's ranch, 2.9 miles east of, in saddle south side of road, top of ridge, south of Medicine Bow River; iron post stamped "6822"----- | 6, 822. 587 |
| Junction of Leo road with road to Brook's ranch, 4.2 miles southeast of, 50 feet south of road from Brook's ranch, along ridge south of Medicine Bow River; center of cross on sandstone outcrop, marked "6871"----- | 6, 871. 14 |
| Junction of Leo road with road to Brook's ranch, 5 miles southeast of, north side of road along ridge south of Medicine Bow River from Brook's ranch to Hanna, in sandstone outcrop; bronze tablet stamped "7015"----- | 7, 015. 647 |
| Hanna, 8 miles north of, 60 feet southwest of wagon road from Brook's ranch to Hanna; center of cross on sandstone outcrop, marked "7283"----- | 7, 283. 61 |
| Hanna, 7.2 miles north of, south side of north prong of Willow Spring Canyon, 200 feet west of juniper tree; center of cross on sandstone outcrop, marked "7062"----- | 7, 062. 63 |
| Hanna, 6.4 miles north of, 80 feet northwest of road from Hanna to Hanson's ranch, 700 feet southwest of sheep pens, on white sandstone ledge; bronze tablet stamped "6940"----- | 6, 940. 217 |
| Hanna, 5.5 miles north of, 20 feet west of road to rocky ford on Medicine Bow River; center of cross cut on sandstone rock, marked "7095"----- | 7, 094. 83 |
| Hanna, 4.5 miles north of, east side of road from Hanna to rocky ford on Medicine Bow River, where road drops off hill; center of cross on sandstone rock, marked "7229"----- | 7, 229. 01 |
| Hanna, 3.8 miles north of, 100 feet east of road from Hanna to rocky ford on Medicine Bow River, 20 feet southeast of old rock house; center of cross cut on sandstone ledge, marked "7200"----- | 7, 199. 96 |
| Hanna, 2.7 miles north of, in flat 50 feet west of wagon road to rocky ford on Medicine Bow River; iron post stamped "7057" (?)----- | 7, 057. 443 |
| Hanna, 2 miles north of, where road to rocky ford on Medicine Bow River tops ridge, on conglomerate rock on east side of road, marked "7015"----- | 7, 015. 64 |
| Hanna, 1 mile north of, east side of road from Hanna to rocky ford on Medicine Bow River, on sandstone rock, marked "6842"----- | 6, 842. 31 |
| From junction of road near Brook's ranch northwest to old bench mark north of iron bridge over Medicine Bow River. | |
| Hanna, 13.4 miles northwest of, 100 feet northeast of road to Leo, 400 feet west of rock monument, top of hill; circle on sandstone rock----- | 6, 806. 78 |

| | Feet. |
|---|------------|
| Hanna, 16 miles northwest of, on road to Leo; on northeast pier of iron bridge over Medicine Bow River; center of cross marked "6314" ----- | 6, 314. 46 |

Walcott Quadrangle.

CARBON COUNTY.

The elevations in the following list were determined by primary leveling and accord with the 1912 adjustment. Orthometric corrections have been applied.

The leveling was done in 1912 by F. L. Whaley.

WALCOTT QUADRANGLE.

[Latitude 41° 45'-42°; longitude 106° 45'-107°.]

From Walcott northeast along highway via Edson station 12 miles, thence west to point 9.5 miles northeast of Fort Steele.

| | Feet. |
|--|-------------|
| Walcott, 0.3 mile east of, 0.2 mile south of Union Pacific R. R., ground elevation at forks of Hanna and Fort Steele roads, marked "6315" ----- | 6, 615. 9 |
| Walcott, 540 feet east of Union Pacific R. R. station, on first joint of north rail on east-going track, 6 feet west of road crossing; elevation on rail joint, marked "6625" ----- | 6, 625. 2 |
| Walcott, Union Pacific R. R. station, joint of track nearest southwest corner of; marked "6625" ----- | 6, 625. 3 |
| Walcott, 0.5 mile southeast of, southwest joint on southwest rail on trestle of Saratoga & Encampment Ry.; elevation at joint, marked "6626" ----- | 6, 626. 5 |
| Walcott, 1 mile southeast of, 10 feet east of Saratoga & Encampment Ry. and Hanna-Walcott wagon road crossing; elevation on first joint of east rail, painted "6638" ----- | 6, 638. 4 |
| Walcott, 2 miles northeast of, 50 feet east of road to Hanna, on south slope of ridge, 15 feet from top; marked on rock "T.B.M. 6788" ----- | 6, 788. 48 |
| T. 21 N., R. 83 W., 1,000 feet east of east side of sec. 19, 2.8 miles northeast of Walcott, 100 feet south of Walcott-Hanna road, at top of hill; iron post stamped "6880" ----- | 6, 880. 485 |
| Walcott, 4.5 miles northeast of, 0.5 mile north of Hanna road, 50 feet above bottom drain where it leaves side of high ridge; rock on east side of drain marked "6828" ----- | 6, 828. 61 |
| Edson station, east of, on divide of high ridge south of Union Pacific R. R., at head of second draw from south side of ridge running west; rock 1.5 feet square, elevation painted "6912" ----- | 6, 912. 16 |
| Edson station, 0.2 mile east of, 10 feet north of semaphore, in front of section house, joint of south rail of east-going track; elevation painted "6731" ----- | 6, 731. 4 |
| Edson station, 1 mile northeast of, on Union Pacific R. R., 500 feet north of big rock cut, nearest joint of south rail of east-going track to semaphore; elevation painted "6752" ----- | 6, 752. 9 |
| Edson station, 1.8 miles northeast of, 50 feet east of road on top of ridge, in top of large red sandstone rock; bronze tablet stamped "6868" ----- | 6, 868. 665 |

| | Feet. |
|---|-------------|
| Edson station, 3.2 miles northeast of, 40 feet northwest of road at foot of south slope of long east-west ridge; elevation painted on large white sandstone rock, marked "7004"----- | 7, 004. 98 |
| Edson station, 3.2 miles north of, 300 feet south of road on long east-west ridge; west end of long yellow sandstone rock, painted "6887"----- | 6, 887. 71 |
| T. 22 N., R. 81 W., 280 feet south of northeast corner of sec. 21, 280 feet south of section corner on south side of long east-west ridge, in white sandstone ledge; bronze tablet stamped "6868"----- | 6, 868. 786 |
| Walcott, 8.5 miles north of, 700 feet southwest of road crossing, on long east-west ridge, 200 feet south of east-west road; elevation painted on top of white sandstone outcrop, marked "6754"----- | 6, 752. 78 |
| Walcott, 9 miles north of, on Walcott-Faris ranch road, near southeast corner of sec. 10, T. 22 N., R. 84 W., 420 feet west of road fork, in north end of white sandstone ledge outcrop, in small drain off long east-west ridge----- | 6, 686. 88 |
| T. 22 N., R. 84 W., near quarter corner on south side of sec. 9, 150 feet north of center of drain leading into lake; elevation painted on red sandstone rock, marked "6569"----- | 6, 567. 36 |
| T. 22 N., R. 84 W., 0.2 mile southeast of northwest corner of sec. 17, 9.5 miles north of Fort Steele, in open flat, 500 feet northeast of old lake, 10 feet east of road; iron post stamped "6528, Adj., 03"----- | 6, 529. 284 |
| From point 6 miles north of Fort Steele southeast along road to Walcott. | |
| Walcott, 8 miles northwest of, in flat basin between St. Marys Mountain and Mount Steele, 85 feet east of road; nail in wooden stake 2 by 4 inches and 3 feet long driven in ground, painted "T.B.M. 6635"----- | 6, 635. 44 |
| Walcott, 7.2 miles northwest of, at forks of Walcott and Fort Steele roads, 200 feet north of drain; base of large white sandstone rock, painted "T.B.M. 6662"----- | 6, 662. 34 |
| Walcott, 6.5 miles northwest of, 125 feet north of road, on south slope of low ridge; red sandstone boulder, painted "Y.B.M. 6702"----- | 6, 702. 53 |
| T. 21 N., R. 84 W., 500 feet west of quarter corner on east side of sec. 7, 4.5 miles northwest of Walcott, 40 feet east of road; iron post stamped "6738"----- | 6, 733. 894 |
| Walcott, 3.5 miles northwest of, on north hump of divide; 20 feet southwest of road----- | 6, 845 |
| Walcott, 2.2 miles northwest of, about center of large basin on small rise, 50 feet west of road; rock painted "T.B.M. 6751"----- | 6, 751. 16 |
| Walcott, 0.8 mile northwest of, 100 feet east of road, on west slope of low ridge; gray granite rock painted "T.B.M. 6714"----- | 6, 714. 18 |
| Walcott, 1.2 miles northwest of, near center of sec. 22, T. 21 N., R. 84 W., 100 feet east of road, on west side of small ridge; iron post stamped "6713"----- | 6, 713. 868 |
| Walcott, in front of station; top of rail----- | 6, 625. 2 |
| From point 12.5 miles northeast of Fort Steele along road east 5 miles, thence south to point 3 miles north of Edson station. | |
| Fort Steele, 12.5 miles northeast of, thence 1 mile east, 200 feet east of drain; white sandstone rock, painted "T.B.M. 6438"----- | 6, 438. 56 |
| Fort Steele, 12.5 miles northeast of, thence 1.6 miles east, 1.5 miles east of road, on north side of drain; white sandstone ledge, painted "T.B.M. 6522"----- | 6, 522. 02 |

| | Feet. |
|--|-------------|
| Walcott, 10 miles north of, 30 feet west of Walcott-Medicine Bow River road, near center of sec. 1, T. 22 N., R. 83 W., on top of small ridge; yellow sandstone rock, painted "T.B.M. 6530"----- | 6, 529. 93 |
| Walcott, 11 miles north of, on Walcott-Medicine Bow River road, 100 feet east of flag in big rock pile, 0.2 mile east of road crossing ridge; yellow sandstone rock, painted "T.B.M. 6533"----- | 6, 532. 95 |
| T. 22 N., R. 83 W., 2,000 feet southwest of northeast corner of sec. 5, on southwest slope of prominent ridge, on big sandstone ledge; bronze tablet stamped "6533"----- | 6, 532. 897 |
| T. 22 N., R. 83 W., 500 feet northeast of southeast corner of sec. 5, 50 feet east of large drain, on west slope of ridge; top of white sandstone boulder 10 by 6 feet, marked "T.B.M. 6558"----- | 6, 558. 02 |
| Edson station, 7 miles north of, 0.2 mile east of road, on south side of rocky ridge; yellow sandstone rock, painted "T.B.M. 6639"----- | 6, 639. 39 |
| T. 22 N., R. 83 W., sec. 17, 25 feet west of fork of two dim roads, on south edge of highest ridge, in yellowish sand rock; bronze tablet stamped "6875"----- | 6, 875. 243 |
| T. 22 N., R. 83 W., 1,000 feet southwest of northeast corner of sec. 20, 0.2 mile east of road, on top of low rocky ridge, near pile of stones; yellow sandstone rock, painted "T.B.M. 6799"----- | 6, 799. 33 |
| From point 18 miles northeast of Fort Steele along road west 9 miles, thence south to point 6 miles north of Fort Steele. | |
| T. 23 N., R. 84 W., near quarter corner on east side of sec. 12, 0.8 mile west of road, 1.8 miles east of North Platte River, on west slope of small ridge; yellow sandstone rock, painted "T.B.M. 6431"----- | 6, 431. 44 |
| T. 23 N., R. 84 W., 500 feet northwest of center of sec. 12, 1.5 feet west of road, 0.4 mile east of North Platte River, in large flat; yellow sandstone rock knoll, painted "T.B.M. 6407"----- | 6, 407. 38 |
| T. 23 N., R. 84 W., NW. $\frac{1}{4}$ sec. 11, 18 miles northeast of Fort Steele, 1,000 feet south of bend in North Platte River, 25 feet above bed of coulee on east bank; large yellow sandstone rock, painted "T.B.M. 6310"----- | 6, 310. 10 |
| T. 23 N., R. 84 W., 500 feet southeast of northwest corner of sec. 11, 0.8 mile west of North Platte River, 1,000 feet southeast of rock signal on hill, on east side of deep coulee; large yellow sandstone ledge, painted "T.B.M. 6364"----- | 6, 364. 08 |
| T. 23 N., R. 84 W., 250 feet northwest of southeast corner of sec. 3, 0.5 mile northwest of prominent bend in North Platte River, 150 feet south of tall rock pile on prominent hill, in sandstone ledge; bronze tablet stamped "6464"----- | 6, 464. 108 |
| T. 23 N., R. 84 W., 1,000 feet east of quarter corner on west side of sec. 3, 1.5 miles west of North Platte River, on north slope of smooth ridge, 0.2 mile south of Dry Creek; hard reddish rock, painted "T.B.M. 6428"----- | 6, 428. 73 |
| T. 23 N., R. 83 W., near center of sec. 4, 100 feet east of center of Dry Creek, 100 feet north of dim road to Dry Creek from south, in south slope of creek bank; upright rock, painted "T.B.M. 6390"----- | 6, 390. 52 |
| T. 23 N., R. 84 W., 1,000 feet west of quarter corner on east side of sec. 5, on east side of draw emptying into Dry Creek from north, in big sandstone ledge; bronze tablet stamped "6444"----- | 6, 444. 966 |

| | Feet. |
|---|-------------|
| T. 23 N., R. 84 W., 1 mile southeast of northwest corner of, 300 feet east of quarter corner on west side of sec. 5, 200 feet east of fork of coulee that empties into Dry Creek; cross in white sandstone rock, marked "T.B.M. 6463"----- | 6, 463. 86 |
| T. 23 N., R. 84 W., at northwest corner of township; cross in top of stone, marked "6563"----- | 6, 563. 30 |
| T. 23 N., R. 85 W., 2,000 feet southeast of northwest corner of sec. 1, on prominent hill, in north side of big reddish rock; bronze tablet stamped "6725"----- | 6, 725. 440 |
| T. 23 N., R. 85 W., 2,000 feet northwest of southeast corner of sec. 2, on west slope of low ridge; yellow sandstone rock, marked "T.B.M. 6703"----- | 6, 703. 93 |
| Fort Steele, 16.9 miles north of, 2 miles west of range line of Ra. 84 and 85 W., on west side of small ridge; cross on yellow sandstone rock, marked "T.B.M. 6753"----- | 6, 753. 38 |
| T. 23 N., R. 85 W., 1,500 feet northwest of southeast corner of sec. 10, 5.5 miles north of Miller ranch house, on north end of small rocky mound; cross in white sandstone rock, marked "T.B.M. 6752"----- | 6, 752. 38 |
| T. 23 N., R. 85 W., 1,200 feet west of quarter corner on east side of sec. 15, at junction of two small coulees, in prominent reddish rock; bronze tablet stamped "6696"----- | 6, 696. 443 |
| T. 23 N., R. 85 W., 1,500 feet northeast of southwest corner of sec. 15, 12 miles north of Fort Steele, 100 feet south of small drain, 1,000 feet east of prominent rocky point, on north side of sharp rocky ridge; cross in white sandstone ledge, marked "6621"----- | 6, 621. 02 |
| T. 23 N., R. 85 W., 2,000 feet southwest of northeast corner of sec. 21, 4 miles north of Miller's ranch, 0.5 mile east of large drain running south in flat valley, between two rocky points; cross in white sandstone rock, marked "6572"----- | 6, 572. 88 |
| T. 23 N., R. 85 W., 300 feet northwest from southeast corner of sec. 21, 50 feet south of north end of long stone wall; cross in stone, marked "6537"----- | 6, 537. 82 |
| T. 23 N., R. 85 W., 1,500 feet north of southeast corner of sec. 28, near south end of stone wall; cross on east side of wall, marked "6947"----- | 6, 487. 04 |
| T. 23 N., R. 85 W., 2,000 feet south of northeast corner of sec. 33, where a coulee breaks through long stone wall, on east side of wall, in rock; bronze tablet stamped "6460"----- | 6, 460. 580 |
| T. 23 N., R. 85 W., 1,400 feet north of southeast corner of sec. 33, 100 feet east of high rocky point, on north end of south stone wall (3 miles north of Miller's ranch); cross in white sandstone ledge at base of stone wall, marked "T.B.M. 6444"----- | 6, 444. 65 |
| T. 22 N., R. 85 W., 2,000 feet northeast of southwest corner of sec. 3, 400 feet east of dim road running north from Miller's ranch, on west slope of high rocky cliff; cross on red sandstone rock, marked "T.B.M. 6409"----- | 6, 409. 27 |
| Fort Steele, 10.5 miles north of, 0.8 mile northeast of Miller's ranch, 500 feet east of road; nail in top of wooden stake 2 by 4 inches driven in ground, marked "T.B.M. 6379"----- | 6, 379. 89 |
| T. 22 N., R. 85 W., south side of sec. 10, 100 feet north of road from Miller's ranch to Fort Steele; cross on quarter section corner, marked "T.B.M. 6417"----- | 6, 417. 68 |

| | Feet. |
|---|-----------|
| T. 22 N., R. 85 W., about 0.2 mile southeast of quarter corner on north side of sec. 15, 5 feet north of road; iron post stamped "6488"----- | 6,488.072 |
| T. 22 N., R. 85 W., 500 feet southeast of quarter corner on west side of sec. 14, 100 feet west of road, on west side of small drain; cross in rock, marked "T.B.M. 6524"----- | 6,524.40 |
| T. 22 N., R. 85 W., 1,200 feet south of quarter corner on north side of sec. 23, 3 miles southeast of Miller's ranch, on south slope of ridge running north, 50 feet north of road; cross in hard red sandstone rock, marked "T.B.M. 6566"----- | 6,566.75 |
| Fort Steele, 7.3 miles north of, 100 feet south of road, 0.2 mile north of big ridge, 4 miles east of Miller's ranch; cross in small white sandstone rock, marked "T.B.M. 6558"----- | 6,558.73 |
| T. 22 N., R. 85 W., 0.2 mile southeast of northwest corner of sec. 25, 180 feet east of road, 4.5 miles southeast of Miller's ranch, on top of small sharp ridge; cross in red sandstone rock, marked "T.B.M. 6542"----- | 6,542.36 |

Alcova, Casper, Douglas, Ferris, Fort Steele, Glenrock, and Leo quadrangles.

CARBON, CONVERSE, AND NATRONA COUNTIES.

The elevations in the following list were determined by primary leveling extending along North Platte River from bench marks of the Coast and Geodetic Survey at Rawlins, Fort Steele, and Orin and accord with the 1912 adjustment of precise leveling. Leveling by the Reclamation Service between Orin and Casper was also utilized.

The leveling was done in Ferris quadrangle in 1903 by E. W. Glafcke, in Leo quadrangle in 1903 by E. W. Glafcke, and in 1904 by M. S. Bright, in Fort Steele quadrangle in 1904 by M. S. Bright and R. W. Wieland, and in Alcova, Casper, Douglas, and Glenrock quadrangles in 1904 by M. S. Bright.

ALCOVA QUADRANGLE.

[Latitude 42° 30'-43°; longitude 106° 30'-107°.]

From C. Y. ranch along road west of Platte River to Alcova.

| | Feet. |
|---|-----------|
| C. Y. ranch, 2.75 miles southwest of, north slope of flat ridge, in road forks; iron post stamped "5478, Adj., 1903"----- | 5,477.683 |
| C. Y. ranch, 6 miles southwest of, 0.5 mile south of lake, in road forks (Reclamation Service b. m.); iron post stamped "5392" (5391, Adj., 1903 stamped on side of cap)----- | 5,390.523 |
| Clarkson ranch, 800 feet southeast of, 100 feet north of draw, in loop of road (Reclamation Service b. m.); iron post stamped "5563" (5562, Adj., 1903 stamped on side of cap)----- | 5,561.163 |
| Clarkson, 3.25 miles south of, on ridge, 10 feet east of road; iron post stamped "5997 Adj., 1903"----- | 5,996.670 |
| Poyce Ford, 3.25 miles west of, in flat east side bad lands, 15 feet south of road forks; iron post stamped "5602, Adj., 1903"----- | 5,601.706 |

| | Feet. |
|---|-------------|
| Owen Poyce ranch, 0.5 mile northeast of, 200 feet south of ford, 200 feet west of river, 20 feet south of road (Reclamation Service b. m.); iron post stamped "5273" (5271, Adj., 1903 stamped on side of cap) ----- | 5, 270. 707 |
| Michael Hop ranch, 0.5 mile west of, 650 feet south of road forks, 500 feet northwest of river, east toe of hill, 10 feet west of road; iron post stamped "5316, Adj., 1903" ----- | 5, 315. 968 |
| Alcova, 3.75 miles north of, 350 feet west of fence corner, 300 feet north of draw, west side of road, 40 feet north of forks; iron post stamped "5363, Adj., 1903" ----- | 5, 362. 942 |
| Alcova, 1,000 feet north of; iron post stamped "5366" (Reclamation Service b. m.) ----- | 5, 363. 412 |
| Alcova, in village of, 200 feet west of river, 150 feet south of building occupied by Alcova Mercantile Co. and post office, 45 feet west of road, in granite bowlder; aluminum tablet stamped "5355, Adj., 1903" ----- | 5, 355. 547 |
| From Poyce Ford along road south to Bear Springs, thence west to Alcova. | |
| Poyce Ford, 2.25 miles southeast of, on flat ridge, 4 feet west of road; iron post stamped "5487, Adj., 1903" ----- | 5, 486. 617 |
| Poyce Ford, 5.25 miles south of, on north slope of hill, 10 feet south of road; iron post stamped "5511, Adj., 1903" ----- | 5, 510. 640 |
| Hayworth sheep pens, about 0.75 mile south of, in open flat, 14 feet west of road; iron post stamped "5820, Adj., 1903" ----- | 5, 819. 561 |
| Bear Springs, 1 mile northeast of, on flat top of ridge, north side of gap, 40 feet west of road, in granite outcrop; aluminum tablet stamped "6389, Adj., 1903" ----- | 6, 388. 737 |
| Bear Springs, 2 miles northwest of, north toe of slope, 12 feet east of road; iron post stamped "6086, Adj., 1903" ----- | 6, 085. 488 |
| From point near Hanson ranch north along road to Alcova. | |
| Hanson ranch, 0.25 mile north of, about 900 feet south of short red ridge, on south slope of hill, 150 feet west of draw, 15 feet west of road; iron post stamped "6020, Adj., 1903" ----- | 6, 020. 369 |
| Natrona Oil Well No. 1, 0.75 mile south of, about 800 feet east of Platte River, in road forks; iron post stamped "5434, Adj., 1903" ----- | 5, 434. 297 |
| Platte River, at U. S. water gage; surface of water August 11, 1904 ----- | 5, 331. 8 |
| From mouth of Sweetwater River along road northeast to Alcova. | |
| Sweetwater River, mouth of; surface of water August 17, 1904 ----- | 5, 702 |
| Baker's ranch house, 400 feet north of, about 600 feet east of Sweetwater River, 300 feet east of road, on spur of ridge; iron post stamped on side of cap "5775, Adj., 1903" (Reclamation Service b. m.) ----- | 5, 774. 934 |
| Bohannon ranch, 1 mile north of, 350 feet south of gate, 250 feet east of Sweetwater River, 150 feet east of road, on hillside, in granite outcrop; aluminum tablet stamped "5784, Adj., 1903" ----- | 5, 783. 739 |
| Bohannon ranch, 4 miles north of, 350 feet north of crossroads, south side of slope, 6 feet east of road; iron post stamped "6214, Adj., 1903" ----- | 6, 213. 986 |
| Alcova, 6.25 miles west of, 20 feet south of road, in gap; iron post stamped on side of cap "6343" (Reclamation Service b. m.) ----- | 6, 343. 061 |
| Alcova, 5 miles west of, on spur of ridge where road turns north, 10 feet west of road; iron post stamped "6126, Adj., 1903" ----- | 6, 126. 012 |

CASPER QUADRANGLE.

[Latitude 42° 30'-43°; longitude 106°-106° 30'.]

From point 1.5 miles east of Big Muddy Creek along Chicago & North Western Railway to Casper.

Feet.

| | |
|--|-----------|
| Big Muddy, 1.5 miles east of, 100 feet southwest of bridge 907, west bank of canyon, midway between wagon road and railroad; iron post stamped on side of cap "5040"----- | 5,039.559 |
| Big Muddy, in front of station; top of south rail----- | 5,052.5 |
| Big Muddy, 1.5 miles west of station, 90 feet south of track, 150 feet southeast of stone culvert, 5 feet east of gate at road crossing; iron post stamped on side of cap "5037"----- | 5,036.587 |
| Strouds siding, 6 miles east of, 500 feet southwest of milepost 599, 100 feet south of track, 3 feet east of wire gate; iron post stamped "5099, Adj., 1903"----- | 5,068.542 |
| Strouds siding, 2.8 miles east of, north side of track, 100 feet north-east of road crossing, 400 feet west of bridge 924, in fence corner; iron post stamped on side of cap "5122"----- | 5,121.787 |
| Strouds siding, 2 miles east of, north side of track, opposite milepost 593, near right of way fence; iron post stamped "5110, Adj., 03"----- | 5,109.520 |
| Casper, 2.25 miles east of, 100 feet north of track, 60 feet northeast of milepost 596, south side of wagon road, 4 feet west of fence corner; iron post stamped "5121, Adj., 03"----- | 5,120.494 |
| Casper, in front of Chicago & North Western Ry. station; top of south rail----- | 5,123.0 |
| Casper, 50 feet east of courthouse, at entrance to grounds, 3 feet south of gate; iron post stamped "5124, Adj., 1903"----- | 5,123.572 |
| Casper, Stockmen's National Bank, north of east entrance, in concrete pavement; aluminum tablet stamped "5125" (Reclamation Service b. m.)----- | 5,123.406 |

From Casper southwest along road west of Platte River to C. Y. ranch house.

| | |
|---|-----------|
| Platte River, at bridge, surface of water, September 2, 1906----- | 5,108 |
| Platte River bridge, 3 miles southwest of, 1,000 feet west of river, 600 feet northwest of sheep pens in road forks; iron post stamped on side of cap "5165, Adj., 1903" (Reclamation Service b. m.)----- | 5,165.000 |
| Platte River bridge, 6.5 miles southwest of, 500 feet south of bad lands, 700 feet west of river, 15 feet west of road, east side of small canyon; iron post stamped "5192, Adj., 1903"----- | 5,191.664 |
| C. Y. ranch house, 500 feet north of, 125 feet west of fence corner, 50 feet north of wire fence; iron post stamped on side of cap "5218, Adj., 1903" (Reclamation Service b. m.)----- | 5,217.530 |

From Casper southwest along stage road east of river to Poyoe Ford.

| | |
|---|-----------|
| Casper, 3 miles southwest of, foot of hills, 120 feet east of Platte River, 100 feet east of road; iron post stamped on side of cap "5132, Adj., 1903"----- | 5,181.456 |
| McFarland ranch, 2.75 miles northeast of, west bank of dry creek, 30 feet south of road; iron post stamped "5225, Adj., 1903"----- | 5,224.559 |
| McFarland ranch, 0.4 mile west of, 400 feet east of Platte River, 60 feet north of road, 10 feet south of east-west fence; iron post stamped on side of cap "5210, Adj., 1903" (Reclamation Service b. m.)----- | 5,209.302 |

| | Feet. |
|--|-------------|
| Madison Creek bridge, 1.5 miles northeast of, south slope, south spur of ridge, north side of canyon, 4 feet east of road, in sandstone outcrop; aluminum tablet stamped "5458, Adj., 1903"----- | 5, 457. 855 |
| Dan Speas ranch, 0.25 mile east of, 0.25 mile east of river, in road forks; iron post stamped "5251, Adj., 1903"----- | 5, 250. 618 |
| Platte River, mouth of Coal Creek; surface of water August 27, 1904. | 5, 197. 0 |
| McBeth ranch house, 1 mile north of, point of sandstone ridge, 90 feet east of road, in outcrop; aluminum tablet stamped "5259, Adj., 1903"----- | 5, 258. 714 |
| Bates Creek bridge, 80 feet south of, east side of road near wire fence, 15 feet north of fence corner; iron post stamped "5325, Adj., 1903"----- | 5, 824. 763 |
| From C. Y. or Goose Egg ranch along road crossing river to Madison Creek bridge. | |
| Platte River, at ford; surface of water September 6, 1904----- | 5, 171 |

DOUGLAS QUADRANGLE.

[Latitude 42° 30'—43°; longitude 105°—105° 30'.]

From Orin along Chicago & North Western Railway to Fetterman siding.

| | |
|---|-------------|
| Orin Junction, Converse County, in southwest stone pier of water tank, on side toward Colorado & Southern Ry. track; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. S 1)----- | 4, 704. 936 |
| Orin Junction, 200 feet south of station, northeast corner of M. G. Howell's residence, also utilized as post office; iron post stamped "4701"----- | 4, 698. 805 |
| Orin Junction, in front of station; top of south rail----- | 4, 704. 2 |
| Irvine, 4 miles east of, north side of track, 50 feet north of milepost 534, near wire fence; iron post stamped on side of cap "4733"----- | 4, 732. 790 |
| Irvine, 1 mile east of, north side of track, 60 feet north of milepost 537, near wire fence; iron post stamped on side of cap "4779"----- | 4, 778. 872 |
| Irvine siding; top of rail----- | 4, 743. 1 |
| Douglas, 6 miles southeast of, north side of track, 50 feet north of milepost 540, near wire fence; iron post stamped on side of cap "4822"----- | 4, 821. 878 |
| Douglas, 3 miles southeast of, 250 feet south of milepost 543, 100 feet south of track, near wire fence; iron post stamped on side of cap "4839"----- | 4, 828. 928 |
| Douglas, 100 feet north of station, 100 feet east of main track, northwest corner of park; iron post----- | 4, 814. 704 |
| Douglas, in front of station; top of rail----- | 4, 815. 4 |
| Douglas, west end of south sill of foundation of water tank (Reclamation Service b. m.)----- | 4, 815. 10 |
| Bridge over Platte River, east end; top of rail----- | 4, 832. 4 |
| Bridge over Platte River, west end; top of rail----- | 4, 832. 5 |
| Bridge across Platte River, 0.25 mile west of, north side of track, 400 feet southwest of Morton ranch house, south edge of road, 3 feet west of gate entrance to railroad right of way; iron post stamped on side of cap "4825"----- | 4, 824. 701 |
| Douglas, 5.8 miles west of, 140 feet west of bridge 861, north side of public road, 4 feet west of gate to pasture; iron post stamped on side of cap "4879"----- | 4, 878. 642 |

| | Feet. |
|---|-------------|
| Fetterman siding, 2.25 miles east of, opposite milepost 555, 90 feet south of track, near wire fence; iron post stamped on side of cap "4893" ----- | 4, 802. 634 |

FERRIS QUADRANGLE.

[Latitude 42°-42° 30'; longitude 107°-107° 30'.]

From point 16 miles north of Rawlins, along road west of river, northeast to point about 3.6 miles northeast of Ferris.

| | |
|---|-------------|
| Rawlins, 17.8 miles north of, 20 feet east of road, 600 feet north of bridge across Separation Creek; iron post stamped "6468" ----- | 6, 460. 076 |
| Rawlins, 21 miles north of, 20 feet east of stage road, in sand hills; iron post stamped "6540" ----- | 6, 541. 449 |
| Rawlins, 24.75 miles north of, 20 feet east of road, in sand hills; iron post stamped "6639" ----- | 6, 640. 452 |
| Stone ranch, 80 feet northeast of buildings at forks of road to Ferris; iron post stamped "6714" ----- | 6, 715. 224 |
| Stone ranch, 4.37 miles north of, 30 miles north of Rawlins, on knoll in sand hills, 20 feet east of road; iron post stamped "6908" ----- | 6, 909. 210 |
| Stone ranch, 7.3 miles north of, in sand hills, on south slope of divide on ridge, 10 feet west of road; iron post stamped "6911" ----- | 6, 911. 808 |
| Stone ranch, 9.6 miles north of, 150 feet north of bridge across Sand Creek, 20 feet east of road; iron post stamped "6612" ----- | 6, 613. 234 |
| Stone ranch, 12 miles north of, 20 feet west of road, in Sand Creek canyon, 700 feet west of creek; iron post stamped "6462" ----- | 6, 563. 447 |
| Ferris, 0.8 mile west of, 740 feet south of forks in Weldon Grove, at Chapman's ranch, 10 feet east of road; iron post stamped "6356" ----- | 6, 356. 596 |
| Ferris, 2.96 miles north of, 15 feet west of road, at northwest corner of Murrey's ranch; iron post stamped "6092" ----- | 6, 092. 561 |
| Perkins ranch, 0.36 mile northwest of, 10 feet west of upper road; iron post stamped "6007, Adj., 1903" ----- | 6, 006. 974 |

FORT STEELE QUADRANGLE.

[Latitude 41° 30'-42°; longitude 106° 30'-107°.]

From point 3.1 miles north of Saratoga north along highways to point 0.8 mile west of Walcott.

| | |
|---|-------------|
| Saratoga, 7 miles north of, 40 feet east of road, 10 feet south of telephone pole, 50 feet east of forks of road to Platte River and coal mines; iron post stamped "7079 Laramie" ----- | 7, 080. 252 |
| Saratoga, 10.2 miles north of, 400 feet east of telephone line, 50 feet east of road; iron post stamped "6927 Laramie" ----- | 6, 928. 166 |
| Cooks ranch, 1.9 miles north of, 8 feet east of road, 20 feet north of telephone pole; iron post stamped "6887 Laramie" ----- | 6, 888. 155 |
| Cooks ranch, 5 miles north of, 15 feet west of road, 10 feet north of telephone pole; iron post stamped "6718 Laramie" ----- | 6, 719. 061 |
| Walcott, 1.8 miles south of, 3.1 miles north of Pass Creek, on summit 10 feet north of telephone pole, 30 feet south of road; iron post stamped "5907 Laramie" ----- | 6, 908. 002 |
| Walcott, 0.8 mile west of, south of track, near center of capstone of drain pipe, bottom of square cut lettered "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. M 2) ----- | 6, 606. 052 |

From Fort Steele north along road east of North Platte River to point 4 miles south of Medicine Bow River.

| | Feet. |
|---|-------------|
| NOTE.—This line is unadjusted, and closes 1 foot high upon a checked elevation at Medicine Bow River. | |
| Fort Steele, on southeast corner of stone foundation under more eastern one of two southern iron columns supporting the railroad water tank west of station, letters "U. S. B. M." are cut in east face of foundation just under bench mark; bottom of square cut (C. & G. S. b. m. N 2)----- | 6, 514. 547 |
| Fort Steele, in front of Union Pacific R. R. station; top of rail----- | 6, 512. 2 |
| Fort Steele, triangulation station, 600 feet south of station; iron post stamped "6512, Adj., 1903"----- | 6, 513. 270 |
| North Platte River, ford; surface of water July 19, 1904----- | 6, 470. 5 |
| Fort Steele, 3 miles north of, in gap, 10 feet east of summit in road, in sandstone outcrop; aluminum tablet stamped "7094, Adj., 1903"----- | 7, 095. 242 |
| Fort Steele, 6 miles north of, on ridge, 8 feet west of road; iron post stamped "6624, Adj., 1903"----- | 6, 625. 324 |
| Fort Steele, 9.5 miles north of, in open flat, 500 feet northeast of old lake, 10 feet east of road; iron post stamped "6528, Adj., 1903"----- | 6, 529. 284 |
| Fort Steele, 12.5 miles north of, 600 feet north of road forks, on top of flat ridge, 8 feet west of road; iron post stamped "6514"----- | 6, 515. 304 |
| Fort Steele, 15.75 miles north of, about 1,000 feet north of canyon, 110 feet south of old road forks, 8 feet east of road; iron post stamped "6416, Adj., 1903"----- | 6, 417. 279 |
| Fort Steele, 18.25 miles north of, 5 miles south of Medicine Bow River, 25 feet east of road, in flat; iron post stamped "6471, Adj., 1903"----- | 6, 472. 703 |

GLENROCK QUADRANGLE.

[Latitude 42° 30'–43°; longitude 105° 30'–106°.]

From Fetterman siding along Chicago & North Western Railway to point 1.5 miles east of Big Muddy.

| | |
|--|-------------|
| Fetterman siding; top of rail----- | 4, 907. 2 |
| Fetterman siding, 0.5 mile west of, 100 feet west of creek, 700 feet east of milepost 558, 100 feet south of bridge 867, 3 feet west of fence corner; iron post stamped on side of cap "4888"----- | 4, 887. 784 |
| Inez siding, 50 feet north of track, 6 feet west of northeast corner of yard fence around Slichter ranch house; iron post stamped on side of cap "4931"----- | 4, 930. 816 |
| Careyhurst, 150 feet west of section house, south side of track, near wire fence; iron post stamped on side of cap "4944"----- | 4, 943. 627 |
| Section house 106, 1.8 miles east of, 800 feet south of river, north side of track, 80 feet north of milepost 567, near wire fence; iron post stamped on side of cap "4958"----- | 4, 957. 662 |
| Glenrock station, 5 miles east of, 70 feet north of milepost 570, 150 feet northwest of bridge 888, 110 feet west of fence corner, near wire fence; iron post stamped on side of cap "4969"----- | 4, 968. 549 |
| Glenrock, 2 miles east of, 90 feet north of track, opposite milepost 573, south side of wagon road, near wire fence; iron post stamped on side of cap "5009"----- | 5, 008. 710 |
| Glenrock, in front of station; top of south rail----- | 5, 009. 2 |

Feet.

| | |
|---|-------------|
| Glenrock, 1.25 miles west of, 350 feet south of river, 100 feet south of track, 200 feet north of wagon road, near wire fence; iron post stamped on side of cap "5024"----- | 5, 023. 577 |
| Big Muddy, 4 miles east of, 90 feet south of bridge 900, near wire fence; iron post stamped on side of cap "5023"----- | 5, 022. 571 |

LEO QUADRANGLE.

[Latitude 42°-42° 30'; longitude 106° 30'-107°.]

From point 4 miles south of Medicine Bow River north along road east of Platte River to point 3 miles north of Canyon Creek.

| | |
|---|-------------|
| Medicine Bow River, 1 mile south of, 800 feet southwest of corner of secs. 27, 28, 33, and 34, T. 24 N., R. 83 W.; iron post stamped "6415, Adj., 1903." (This elevation is possibly 1 foot too great.)----- | 6, 416. 527 |
| Austin Creek, 3.7 miles south of, 200 yards south of forks of road on mesa, 30 feet west of road; iron post stamped "6448, Adj., 1903"----- | 6, 448. 668 |
| Austin Creek, 500 feet north of, 15 feet west of road, east end of sandstone ridge, at John Schnider ranch, in ledge of sandstone; aluminum tablet stamped "6656, Adj., 1903"----- | 6, 656. 457 |
| Hunter ranch, 3.8 miles south of, top of divide between Lost Creek and Sailor Creek, 70 feet east of road, in limestone boulder; aluminum tablet stamped "7432, Adj., 1903"----- | 7, 432. 626 |
| Lost Creek, 0.25 mile east of, 5.1 feet east of gate to Hunter ranch, 20 feet west of road; iron post stamped "6798, Adj., 1903"----- | 6, 798. 619 |
| Sage Creek, 3 miles southeast of, 100 feet east of road on east slope of hill, base of rock mountain on divide between Sage Creek and Lost Creek, in granite boulder; bronze tablet stamped "6583, Adj., 1903"----- | 6, 583. 797 |
| Sage Creek, 300 feet north of, 100 feet west of trail on edge of mesa, in boulder; aluminum tablet stamped "6042, Adj., 1903"----- | 6, 043. 013 |
| Campbell's ranch, 2.5 miles south of, top of ridge, 9 feet west of road; iron post stamped "6665, Adj., 1903"----- | 6, 665. 850 |
| Campbell's ranch house, 1,000 feet east of, 300 feet north of small stream, on southwest point of ridge, 8 feet north of road; iron post stamped "6805, Adj., 1903"----- | 6, 805. 620 |
| Campbell's ranch, 3.25 miles north of, 300 feet east of divide, 60 feet northeast of granite bluff, 10 feet south of road; iron post stamped "6892, Adj., 1903"----- | 6, 892. 607 |
| Kingrey's cabin, 1.75 miles northwest of, 0.25 mile south of Canyon Creek, 500 feet southeast of butte, on ridge, 10 feet south of road; iron post stamped "6419, Adj., 1903"----- | 6, 419. 598 |
| Canyon Creek, 2.75 miles north of, summit of mesa, 25 feet west of road; iron post stamped "6717, Adj., 1903"----- | 6, 717. 438 |

From point 2 miles north of Ferris east along road crossing river at De Wesse Creek and continuing 0.8 mile southeast to Sage Creek, 6.5 miles south of Hunter ranch.

| | |
|--|-------------|
| Ferris, 4 miles northeast of, 60 feet west of De Wesse Creek, west side of road, 0.6 mile south of clump of box-elder trees; iron post stamped "6041"----- | 6, 041. 893 |
| De Wesse Creek, south of, 750 feet west of Platte River ford, 900 feet northwest of road at east end of Weaver's pasture, on east slope of hill, large rock mound is 60 feet west; iron post stamped "5855"----- | 5, 856. 087 |

| | Feet. |
|---|-------------|
| Platte River, mouth of De Wesse Creek at ford----- | 5, 794 |
| Platte River ford, 5 miles southeast of, 25 feet south of trail, on divide between Sage Creek and river; iron post stamped "5969"--- | 5, 969. 710 |
| Platte River ford, 7.1 miles southeast of, 1 mile southwest of Sage Creek, 20 feet south of trail on south slope of mesa; iron post stamped "6086"----- | 6, 086. 274 |

From road crossing Canyon Creek 3 miles north of Kingrey's cabin west via Cardwell ranch to Pick ranch.

| | |
|--|-------------|
| Hank Cardwell ranch house, 80 feet southwest of, 10 feet south of road, in toe of granite butte; aluminum tablet stamped "6193, Adj., 1903"----- | 6, 193. 930 |
|--|-------------|

From point near Perkins ranch by road west of river to Pick ranch.

| | |
|---|-------------|
| Weaver's lower ranch house, 0.25 mile northwest of, 10 feet north of gate entrance to pasture; iron post stamped "5808, Adj., 1903"--- | 5, 807. 700 |
| Pick ranch, 0.75 mile north of, 0.25 mile west of Platte River, 700 feet northeast of fence corner on sand ridge, 15 feet east of road; iron post stamped "5751, Adj., 1903"----- | 5, 750. 648 |

Baggs, Rawlins, and Savery Creek 30' quadrangles.

CARBON COUNTY.

The elevations in the following list are based on a Coast and Geodetic Survey bench mark at Rawlins corrected to 1912 adjustment.

The leveling was done in 1907 by L. Reinecke. The line was run as a single unchecked primary line for 31 miles. From there on rod readings to hundredths only were made; the line must, therefore, be regarded as secondary, although permanent bench marks were set at intervals along its course.

The checked leveling in Rawlins quadrangle north of Rawlins was done in 1903 by E. W. Glafcke.

BAGGS QUADRANGLE.

[Latitude 41°-41° 30'; longitude 107° 30'-108°.]

From point 32.6 miles southwest of Rawlins southwest along highways to Baggs.

| | Feet. |
|--|-------------|
| Rawlins, 32.8 miles southwest of, about 0.5 mile south of Willson's ranch house, 25 feet east of Baggs road, 15 feet north of trail south, 7 feet northeast of T road east, in southwest corner of pasture; iron post----- | 7, 013. 10 |
| Rawlins, 35.9 miles southwest of, 20 feet west of Baggs road, at point where road turns south down slope after running on sandy top for 0.8 mile; iron post----- | 6, 955. 181 |
| Rawlins, 39.2 miles southwest of, 25 feet east of Baggs road, north of bed of intermittent stream; iron post stamped "6717, Adj., '03--- | 6, 718. 128 |
| Muddy Bridge, in south rail of bridge; east bolt----- | 6, 455. 76 |

| | Feet. |
|--|----------|
| Rawlins, 42.5 miles southwest of, 3 miles north of Muddy Bridge, 26 feet south of Rawlins-Baggs road, 26 feet west of old foundation; iron post----- | 6,529.00 |
| Rawlins, 45.5 miles southwest of, 240 feet east of Muddy Bridge, 37 feet south of Baggs road; iron post stamped "6456, Adj., '03"----- | 6,457.33 |
| Rawlins, 50.8 miles southwest of, 5.3 miles southwest of Muddy Bridge, 20 feet west of Wamsatter-Baggs road, 80 feet north of bridge over Robber Gulch; iron post stamped "6425, Adj., '03"----- | 6,426.05 |
| Rawlins, 60.4 miles southwest of, 5 miles north of Baggs, 110 feet north of road fork to Dixon, 6 feet north of signboard "Baggs 5 miles"; iron post stamped "6305, Adj., '03"----- | 6,305.99 |
| Baggs, at southwest corner of post-office building; iron post stamped "6243, Adj., '03"----- | 6,244.56 |

RAWLINS QUADRANGLE.

[Latitude 41° 30'-42°; longitude 107°-107° 30'.]

From Rawlins north along road west of river.

| | |
|--|-----------|
| Rawlins, northwest corner of Fourth and Cedar streets, on stone sill of one-story building, 2 feet from southwest corner of sill and 3 inches above sidewalk; bottom of square hole, lettered "U. S. □ B. M." (C. & G. S. b. m. Q. 2)----- | 6,754.534 |
| Rawlins, 2.6 miles north of, 25 feet west of road, 850 feet north of forks of Lander and Ferris stage roads; iron post stamped "6869"----- | 6,870.812 |
| Rawlins, 5.8 miles north of, 25 feet west of road on north slope of hill; iron post stamped "6985"----- | 6,986.785 |
| Rawlins, 8.4 miles north of, 50 feet north of road, top of first sandstone ridge, in sandstone ledge, rock mound alongside; aluminum tablet stamped "7101"----- | 7,101.997 |
| Rawlins, 12 miles north of, in Browns Canyon, 60 feet south of road, in ledge, rock mound near; bronze tablet stamped "6721"----- | 6,722.062 |
| Rawlins, 15.25 miles north of, 0.5 mile west of Alkalie Lake, 25 feet west of road, base of small knoll; iron post stamped "6459"----- | 6,460.485 |

From Rawlins southwest along highways 17.8 miles.

| | |
|--|-----------|
| Rawlins, northeast window of roundhouse; depression cut in window-sill, marked U.S. □ B.M. (C. & G. S. b.m.)----- | 6,748.508 |
| Rawlins, 1 mile west of, on top of first hill, north of road; cross on rock----- | 6,814.307 |
| Rawlins 3.3 miles west of, west side of road; cross on rock----- | 6,981.17 |
| Rawlins, 3.7 miles west of, west of road; iron pin in bush----- | 7,041.36 |
| Rawlins, 3.7 miles west of, 12 feet west of road; cross on flat rock----- | 7,041.40 |
| Rawlins, 4.7 miles west of, 2 feet west of road; on small outcrop of rock----- | 7,183.15 |
| Rawlins, 5.1 miles southwest of, 100 feet south of bowlder on west side of road; on big bowlder 8 feet east of road----- | 7,206.21 |
| Rawlins, 5.7 miles west of, 40 feet west of road; cross on end of rock----- | 7,164.60 |
| Rawlins, 2.3 miles southwest of, road north at T road west, gully; cross on granite bowlder----- | 6,805.349 |

| | Feet. |
|---|-----------|
| Rawlins, 3 miles southwest of, west side of road to Baggs, 50 feet south of road to Nebraska coal mine, about 300 feet southwest of gap in old Union Pacific R. R. grade; iron post stamped "6835"----- | 6,886.251 |
| Rawlins, 4.2 miles southwest of, 1,000 feet south of big bend in road, on top of ridge, 10 feet west of road; cross on flat stone----- | 6,908.60 |
| Rawlins, 6.9 miles southwest of, west side of road; cross on boulder----- | 7,068.74 |
| Rawlins, 7 miles southwest of, on ridge with basin to west and valley to left; iron post----- | 7,062.270 |
| Rawlins, 10.6 miles southwest of, west of Baggs road, 30 feet north by 30 feet east of east-west trail crossing; iron post----- | 7,074.967 |
| Rawlins, 11 miles southwest of, east of road; red cross on rock----- | 7,079.55 |
| Rawlins, 13.7 miles southwest of, 35 feet west of Baggs road, on top of ridge where road turns east to go down valley; iron post stamped "7185"----- | 7,183.070 |
| Rawlins, 17.2 miles southwest of, at Sixteen-mile ranch, 60 feet southwest of ranch house, 6 feet northeast of corner post, 3 feet south of fence, 35 feet east of Baggs road; iron post----- | 7,116.028 |

SAVERY CREEK QUADRANGLE.

[Latitude 41°-41° 30'; longitude 107°-107° 30'.]

From point 18 miles southwest of Rawlins southwest along highways to point 31.2 miles southwest of Rawlins.

| | |
|--|-----------|
| Rawlins, 20.8 miles southwest of, at Twenty-mile ranch, 12 feet north of northeast corner of ranch house, 25 feet west of Baggs road; iron post----- | 7,172.890 |
| Rawlins, 23.7 miles southwest of, 140 feet north of point where trail goes west on top of rise, 80 feet west of Baggs road; iron post----- | 7,212.748 |
| Rawlins, 26.6 miles southwest of, 100 feet west of Baggs road, 50 feet east of bank of creek, in low bottom near southwest corner of fence; iron post----- | 7,017.289 |
| Rawlins, 28.6 miles southwest of, 300 feet north of Robinson's ranch house, in northwest end of bridge; bolt head----- | 6,954.508 |
| Rawlins, 29.7 miles southwest of, 1,200 feet south of summit south of Robinson's ranch, 25 feet east of Baggs road, north of green valley with many willow bushes, just north of gully opposite gate, in wire fence----- | 7,165.581 |

Aladdin, Devils Tower, Moorcroft, Newcastle, and Sundance quadrangles.

CROOK AND WESTON COUNTIES.

The elevations in the following list were originally based on a bronze tablet in the city hall at Deadwood, S. Dak., set in 1897 and stamped 4543, based on railroad datum. They have since been reduced to mean sea-level datum by applying a correction of plus 2.2 feet, derived from connections with the precise line of the Coast and Geodetic Survey along the railroad passing through Edgemoor, S. Dak., and Newcastle, Wyo.

The leveling was done in the Aladdin quadrangle in 1900 by C. E. Worthington, in Devils Tower and Moorcroft quadrangles in 1902 by Chester Irvine, and in Newcastle and Sundance quadrangles in 1899 by J. T. Stewart.

ALADDIN QUADRANGLE

[Latitude 44° 30'-45°; longitude 104°-104° 30'.]

West along road up Hay Creek through Aladdin to point near Eothen, thence south across Table Mountain to North Redwater, thence east to point 3.5 miles east of Beulah.

| | Feet. |
|--|-----------|
| Robinson's ranch, at junction of old Miles City stage road with road from Aladdin (coal bank), in sandstone 6 by 8 inches and 17 inches above ground; aluminum tablet stamped "3398 Dw"----- | 3,400.235 |
| Barrett, 2.5 miles east of, 18 feet north of wagon road from the Forks to Barrett, north bank of Hay Creek, in sandstone 6 by 5 feet and 2.5 feet above ground; aluminum tablet stamped "3531 Dw"----- | 3,533.419 |
| Aladdin, 1 mile west of, south edge of road, in sandstone 7 by 5 feet and 1.5 feet above ground; aluminum tablet stamped "3737 Dw"--- | 3,739.639 |
| Aladdin, 4.1 miles northwest of, 300 feet south of quarter corner east side of sec. 23, T. 54 N., R. 62 W., 300 feet south of white school-house at fork of road to Aladdin and Eothen, in sandstone 3 by 3 feet and 3 feet above ground; aluminum tablet stamped "4046 Dw"----- | 4,048.616 |
| Eothen, 3.5 miles south of, 0.5 mile south of quarter corner on north side of sec. 2, T. 53 N., R. 62 W., top of divide between head of Redwater Creek and Hay Creek; iron post stamped "4714 Dw"--- | 4,716.486 |
| T. 53 N., R. 62 W., SE. $\frac{1}{4}$ sec. 15, 0.5 mile northeast of house on Rowser's ranch, near wire fence, east of road, on north fork of Redwater Creek; iron post stamped "4132 Dw"----- | 4,134.546 |
| Farrall, 2.2 miles east of, 8 miles west of Beulah, near corner of fence by wagon road; iron post stamped "3875 Dw"----- | 3,877.703 |
| Beulah, 4 miles northwest of, southeast corner of sec. 22, T. 53 N., R. 61 W., 2.5 miles southeast of Ripley's ranch, 50 feet south of road; iron post stamped "3672 Dw"----- | 3,674.564 |
| Beulah, 70 feet north of J. Belliveau's grocery store, 250 feet east of Sand Creek; iron post stamped "3508 Dw"----- | 3,510.442 |
| From The Forks north to VVV ranch, thence northwest to sec. 15, T. 57 N., R. 62 W., and west to sec. 12, T. 57 N., R. 63 W., thence south and west to TT ranch, Beaver Creek. | |
| Robinson's ranch, 3.5 miles north of, near quarter corner west side of sec. 6, T. 54 N., R. 60 W., top of divide between Hay Creek and Belle Fourche River, east side of wagon road; iron post stamped "3618 Dw"----- | 3,620.404 |
| T. 55 N., R. 60 W., NW. $\frac{1}{4}$ sec. 17, 400 feet north of white barn on VVV cattle ranch, west bank of Belle Fourche River, west side of road; iron post stamped "3144 Dw"----- | 3,146.351 |
| T. 55 N., R. 61 W., sec. 12, 0.5 mile southeast of Weaver's ranch, 0.25 mile west of Belle Fourche River; iron post stamped "3198 Dw"--- | 3,200.502 |
| Riverdale, 1.5 miles south of, at forks of wagon road, 1 mile south of Belle Fourche River; iron post stamped "3373 Dw"----- | 3,375.427 |
| Old Riverdale, 200 feet southeast of house, near wire fence on west bank of Belle Fourche River, 300 feet northeast of wagon road; iron post stamped "3196 Dw"----- | 3,198.525 |
| Old Riverdale, 4.2 miles north of, south side of old Miles City road, top of ridge on east side of Belle Fourche River; iron post stamped "3524 Dw"----- | 3,528.686 |

| | Feet. |
|---|-----------|
| White's ranch, 6 miles south of, 50 feet southeast of old Miles City stage road, north bank of Belle Fourche River; iron post stamped "3412 Dw"----- | 3,414.467 |
| Old Riverdale, 8.1 miles northwest of, east side of Belle Fourche River, north side of wagon road on timbered ridge, at fork of road; iron post stamped "3393 Dw"----- | 3,395.621 |
| T. 57 N., R. 62 W., sec. 15, top of high ridge, 1.5 miles north of Belle Fourche River, south side of wagon road; iron post stamped "3627 Dw"----- | 3,629.568 |
| T. 57 N., R. 63 W., sec. 12, south side of wagon road, 0.8 mile northwest of Belle Fourche River; iron post stamped "3486 Dw"----- | 3,488.759 |
| T. 57 N., R. 63 W., sec. 28, east side of wagon road, north bank of small creek emptying into Belle Fourche River; iron post stamped "3522 Dw"----- | 3,524.593 |
| T. 56 N., R. 63 W., sec. 12, 3.6 miles north of Plumer's ranch, west side of wagon road, 0.5 mile east of Belle Fourche River; iron post stamped "3625 Dw"----- | 3,627.613 |
| T. 56 N., R. 62 W., sec. 31, east side of wagon road at corner of wire fence, top of low divide; iron post stamped "3833 Dw"----- | 3,835.672 |
| T. 56 N., R. 63 W., near center of sec. 25, 0.4 mile northwest of Plumer's ranch, east side of wagon road, near wire fence; iron post stamped "3684 Dw"----- | 3,686.613 |
| Driscoll's ranch, 2.5 miles northeast of, south side of wagon road, 0.2 mile south of Belle Fourche River, in sandstone 2 by 2 feet and 1 foot above ground; aluminum tablet stamped "3612 Dw"----- | 3,614.449 |
| Dood's ranch, 2 miles east of, 100 feet east of small drain, 30 feet north of Deer Creek road, in large boulder; bronze tablet stamped "3729 Dw"----- | 3,731.300 |

From TT ranch south to Alva and east to Eothen.

| | |
|---|-----------|
| Woodcock's ranch, 600 feet east of house, east side of wagon road, east side of Beaver Creek, in sandstone 2.5 by 2.5 feet and 1.5 feet above ground; aluminum tablet stamped "3827 Dw"----- | 3,829.661 |
| Alva, sec. 5, T. 54 N., R. 63 W., 900 feet southeast of church, 100 feet east of Lame Johnny Creek, 40 feet southeast of wagon road, in sandstone 10 by 10 inches and 18 inches above ground; aluminum tablet stamped "3992 Dw"----- | 3,994.486 |
| Alva, 4.6 miles southeast of, northeast corner of sec. 24, T. 54 N., R. 63 W., 0.25 mile southeast of schoolhouse, at junction of Beaver Creek road with road from Eothen, in a sandstone 12 by 12 inches and 1 inch above ground; aluminum tablet stamped "4253 Dw"----- | 4,255.916 |
| T. 54 N., R. 62 W., NE. $\frac{1}{4}$ sec. 20, 1.2 miles east of John Mahnken's ranch, at fork of road, top of divide between Hay Creek and Beaver Creek, in sandstone 12 by 12 inches and 14 inches above ground; aluminum tablet stamped "4697 Dw"----- | 4,699.809 |

From Alva south along road to sec. 17, T. 53 N., R. 63 W., thence east down North Redwater to forks of road 1.5 miles west of Farrall.

| | |
|--|-----------|
| Taylor's ranch, 0.2 mile northwest of house, 100 feet north of fork of road, top of divide between Beaver Creek and Lame Johnny Creek, in rock 1 by 1 foot and 2 inches above ground; aluminum tablet stamped "5345 Dw"----- | 5,347.450 |
|--|-----------|

| | Feet. |
|---|-------------|
| Rowser's ranch, 4.6 miles west of, 250 feet northwest of house at Madison's ranch, north side of road; iron post stamped "4745 Dw"----- | 4, 747. 451 |

From point near Eothen northwest to point near Plamer's ranch.

| | |
|--|-------------|
| T. 55 N., R. 62 W., near northeast corner of sec. 34, 0.2 mile northwest of Kimble's ranch, 300 feet northeast of white schoolhouse, on Oak Creek, at fork of road; iron post stamped "3864 Dw"----- | 3, 863.485 |
| T. 55 N., R. 62 W., sec. 17, 600 feet northeast of Jones's ranch house, west side of wagon road, at corner of wire fence; iron post stamped "3827 Dw"----- | 3, 829. 427 |
| T. 55 N., R. 62 W., sec. 6, 0.5 mile north of Phillips's ranch, west side of wagon road; iron post stamped "4203 Dw"----- | 4, 205. 448 |

Along road up Belle Fourche River northeast to point near White's ranch, thence southeast and west to VVV ranch.

| | |
|---|-------------|
| White's ranch, about 1 mile northeast of, top of ridge between Crow Creek and east branch of same; iron post stamped "3450 Dw"--- | 3, 452. 468 |
| T. 57 N., R. 61 W., sec. 5, 11 miles northwest of VVV cattle ranch, 50 feet north of wire fence at top of ridge; iron post stamped "3419 Dw"----- | 3, 421. 536 |
| VVV cattle ranch, 7.4 miles north of, top of divide between Indian Creek and Crow Creek, near State line; iron post stamped "3496 Dw"----- | 3, 496. 391 |
| T. 56 N., R. 60 W., west part of sec. 16, 4 miles north of VVV cattle ranch, 50 feet north of old Miles City stage road; iron post stamped "3269 Dw"----- | 3, 271. 428 |

DEVILS TOWER QUADRANGLE.

[Latitude 44° 30'-45°; longitude 104° 30'-105°.]

From Alva southwest along wagon road through Hulett and Carlisle to Yeast's lower ranch.

| | |
|---|-------------|
| Alva, 5.5 miles west of, 0.43 mile east of road fork to north, 20 feet south of road on ridge; bronze tablet stamped "4150 Dw"----- | 4, 152. 080 |
| Bush's ranch, 300 yards east of, east side of Belle Fourche River, at forks of wagon road; iron post stamped "3738 Dw"----- | 3, 740. 230 |
| Hulett, 3.5 miles south of, west side of Belle Fourche River, 250 feet east of log house, 8 feet west of road; iron post stamped "3795 Dw"----- | 3, 797. 544 |
| Ripley ranch, 100 yards east of, 150 feet west of road, north side of gate; iron post stamped "3819 Dw"----- | 3, 821. 405 |
| Devils Tower, 1 mile east of, south side of Lytle Creek, at Ryan's ranch gate, 300 yards east of house, west side of road; iron post stamped "3909 Dw"----- | 3, 911. 085 |
| Devils Tower, 1.5 miles south of, east side of river, 230 feet north of log cabin, 5 feet west of road; iron post stamped "3870 Dw"----- | 3, 871. 733 |
| Devils Tower, 5 miles south of, east side of river, at gate to ranch, 10 feet east of road; iron post stamped "3887 Dw"----- | 3, 889. 240 |
| McKenzie's ranch, 1 mile south of, west side of road, south side of big gate on summit of ridge; iron post stamped "3969 Dw"----- | 3, 971. 390 |

| | Feet. |
|--|-------------|
| Carlisle, 3.5 miles west of, north side of Cabin Creek, at forks of road; iron post stamped "4083 Dw"----- | 4, 085. 049 |
| Carlisle, 6.5 miles west of, summit of ridge, 5 feet north of road; iron post stamped "4293 Dw"----- | 4, 295. 096 |
| Yeast's upper ranch, 0.5 mile east of, on summit of divide, at forks of road; iron post stamped "4186 Dw"----- | 4, 188. 762 |

From Yeast's lower ranch along wagon road and Little Missouri River to mouth of Prairie Creek, thence northeast to Alsada, Mont., thence south to point 10.8 miles north of Plumer's ranch, 0.7 mile north of Belle Fourche River.

| | |
|--|-------------|
| Yeast's lower ranch, 2 miles north of, 20 feet south of road on ridge; bronze tablet stamped "4118 Dw"----- | 4, 120. 014 |
| Yeast's lower ranch, 5.37 miles north of, 1 mile south of Little Missouri River, 1 mile north of junction of old Montana trail and saw-mill road, 20 feet east of road in saddle; iron post stamped "4086 Dw"----- | 4, 088. 652 |
| Yeast's lower ranch, 9.36 miles north of, 300 yards west of Little Missouri River, at crossing of Carlisle-Alzada and Hulett-D ranch roads; bronze tablet stamped "3852 Dw"----- | 3, 854. 419 |
| Prairie Creek, 0.5 mile northeast of mouth of, east side of Little Missouri River, junction of roads at forks of Grey Ridge; iron post stamped "3826 Dw"----- | 3, 827. 893 |
| Prairie Creek, 3.5 miles north of, 2.5 miles south of Ripley's ranch, east side of Little Missouri River, 10 feet east of road, southeast fence corner; iron post stamped "3757 Dw"----- | 3, 759. 685 |
| Ripley's ranch, 1 mile north of, 500 feet west of old corral, junction of roads south of creek, east side of Little Missouri River; iron post stamped "3705 Dw"----- | 3, 707. 672 |
| Rush's ranch, 1 mile east of, south side of Elkhorn Creek, 10 feet east of crossing of wagon roads, 400 feet west of old corral; iron post stamped "3664 Dw"----- | 3, 666. 333 |
| Hulett's ranch, 1.25 miles east of, 10 feet east of road, north bank of creek; iron post stamped "3630 Dw"----- | 3, 632. 144 |
| Harris ranch, 0.5 mile south of, on north bank of creek, 10 feet west of road; iron post stamped "3607 Dw"----- | 3, 609. 427 |
| Harris ranch, 3 miles north of, 900 feet south of Government Canyon, west foot of Black Hill; iron post stamped "3557 Dw"----- | 3, 558. 934 |
| Holben's ranch, 0.5 mile north of house, east side of north gate, north side of river; iron post stamped "8498 Dw"----- | 3, 499. 815 |

From Ryan's ranch southeast up Lytle Creek to Tutty ranch and return.

| | |
|---|-------------|
| Hutchin ranch, 0.62 mile southwest of, north side of Lytle Creek, 200 feet north of crossing of roads; iron post stamped "4146 Dw"----- | 4, 148. 251 |
| Tutty ranch house, 0.5 mile east of, north side of Lytle Creek, large red sandstone in side of hill; bronze tablet stamped "4402 Dw"----- | 4, 404. 217 |

From Ripley's ranch west via Barber's ranch to Little Missouri River.

| | |
|---|-------------|
| Storm's ranch house, 300 yards northeast of, 40 feet north of forks of road, projection of sandstone ledge; bronze tablet stamped "4025 Dw"----- | 4, 027. 540 |
| Wilkie's ranch gate, 450 feet south of, at forks of road, in drain, sandstone 1 by 1 by 2 feet, 18 inches in ground; bronze tablet stamped "4334 Dw"----- | 4, 335. 985 |

| | Feet. |
|--|-----------|
| Barber's ranch, 0.5 mile east of, 90 feet west of gate, 120 feet east of road forks; bronze tablet stamped "4431 Dw"----- | 4,433.221 |
| Clark's sawmill, 1.5 miles west of, at forks of road in basin; bronze tablet stamped "Dw"----- | 4,160.238 |
| Little Missouri River, 1.5 miles east of, west slope of hill, at forks of road, in drain; bronze tablet stamped "3955 Dw"----- | 3,856.918 |

From Barber's ranch north via Allender's ranch to Bush's ranch on Little Missouri River.

| | |
|---|-----------|
| Allender's ranch, 900 feet northeast of, 400 feet south of forks of road, 3 feet west of road; bronze tablet stamped "4469 Dw"----- | 4,471.134 |
| Allender's ranch, 3 miles northeast of, on ridge, 10 feet west of road; bronze tablet stamped "4351 Dw"----- | 4,353.220 |
| Allender's ranch, 6.25 miles northeast of, 3 miles south of Bush's ranch, east of round knob on black earth ridge; bronze tablet stamped "4123 Dw"----- | 4,125.516 |

From Hulett's ranch southeast via Cross Anchor reservoir to Driscoll.

| | |
|---|-----------|
| Hulett's ranch, 2.12 miles east of, on slope of hill, 10 feet south of road; bronze tablet stamped "3700 Dw"----- | 3,702.510 |
| Cross Anchor reservoir, 0.5 mile north of, at forks of wagon road; bronze tablet stamped "4074 Dw"----- | 4,076.346 |
| Baxter ranch, 0.75 mile east of, north side of Deer Creek, at forks of road; bronze tablet stamped "3869 Dw"----- | 3,870.856 |

From Baxter's ranch southwest to Weaver's ranch, thence north to Cross Anchor reservoir.

| | |
|---|-----------|
| Lewis ranch, 0.5 mile west of, 0.90 mile south of Bates ranch, summit of ridge, 10 feet west of road; bronze tablet stamped "4223 Dw"--- | 4,225.404 |
| Reservoir, 4 miles south of, 2 miles southwest of Lewis ranch, 300 yards north of pasture gate, 10 feet east of forks of road; bronze tablet stamped "4210 Dw"----- | 4,212.494 |
| Reservoir, 1 mile south of, on ridge, 5 miles east of road; bronze tablet stamped "4128 Dw"----- | 4,130.334 |

From Hulett's ranch west up North Fork of Little Missouri River 9 miles and return.

| | |
|---|-----------|
| Darrow's ranch, 300 feet northeast of house, 260 feet south of main road, east side of gate; aluminum tablet stamped "3621 Dw"----- | 3,623.608 |
| Darrow's ranch, 3 miles west of, 40 feet west of small drain, 5 feet south of road; iron post stamped "3656 Dw"----- | 3,658.044 |
| Darrow's ranch, 6 miles southwest of, 450 feet east of bank of creek, 10 feet west of road; aluminum tablet stamped "Dw"----- | 3,685.061 |

MOORCROFT QUADRANGLE.

[Latitude 44°-44° 30'; longitude 104° 30'-105°.]

At Carlisle.

| | |
|---|-----------|
| Carlisle, 299 yards north of post office, east side of gate; iron post stamped "4017 Dw"----- | 4,019.272 |
|---|-----------|

NEWCASTLE QUADRANGLE.

[Latitude 43° 30'–44°; longitude 104°–104° 30'.]

From Newcastle west 3 miles, thence southwest toward Alkali Butte, thence southeast to Crawford's ranch, thence east to mouth of Stockade Beaver Creek, thence north by road to railroad to Newcastle.

| | Feet. |
|---|-------------|
| Newcastle, south corner of city park, in south meridian mark; bronze tablet stamped "4332 Dw"----- | 4, 334. 296 |
| Oil Spring, 0.5 mile southwest of, 450 feet southwest of junction of roads in Little Oil Creek, west side of road; iron post stamped "4156 Dw"----- | 4, 158. 241 |
| Lang's ranch, 200 feet northeast of, south side of road; iron post stamped "4006 Dw"----- | 4, 006. 266 |
| Lang's ranch, 2.4 miles west of, south side of road, top of small divide; iron post stamped "4014 Dw"----- | 4, 016. 271 |
| Lang's ranch, 4.2 miles southwest of, 60 feet west of junction of roads, 0.2 mile west of Beaver Creek bridge; iron post stamped "3895 Dw"----- | 3, 897. 211 |
| Deetkin's ranch, 0.8 mile west of, 25 feet east of junction of roads; iron post stamped "3994 Dw"----- | 3, 996. 378 |
| Deetkin's South Beaver Creek ranch, 0.4 mile north of, on small divide, 25 feet east of road; iron post stamped "4014 Dw"----- | 4, 016. 182 |
| Deetkin's South Beaver Creek ranch, 4 miles northwest of, 25 feet northeast of road, 300 feet north of South Beaver Creek; iron post stamped "4052 Dw"----- | 4, 054. 182 |
| Deetkin's South Beaver Creek ranch, 3 miles southwest of, top of ridge, 25 feet south of road; iron post stamped "4199 Dw"----- | 4, 201. 245 |
| Deetkin's South Beaver Creek ranch, 5.5 miles southwest of, 25 feet west of road on small ridge; iron post stamped "4352 Dw"----- | 4, 354. 266 |
| Alkali Butte, 1.3 miles southeast of, 25 feet west of junction of road from Alkali Creek with road up Sheep Creek; iron post stamped "4403 Dw"----- | 4, 405. 202 |
| Alkali Butte, 3 miles southeast of, 0.2 mile northeast of road crossing Alkali Creek, 360 feet east of creek, 25 feet east of road; iron post stamped "4056 Dw"----- | 4, 058. 228 |
| Alkali Butte, 6.4 miles southeast of, 25 feet east of road; iron post stamped "3972 Dw"----- | 3, 974. 248 |
| Crawford's ranch, 0.2 mile northwest of, 75 feet northwest of junction of roads; iron post stamped "3870 Dw"----- | 3, 872. 102 |
| Crawford's ranch, 2.5 miles northeast of, top of divide between Alkali Creek and Robbers Roost Creek, 15 feet south of road; iron post stamped "4039 Dw"----- | 4, 041. 166 |
| Crawford's ranch, 6 miles northeast of, 1.1 miles southeast of point where Sheep Creek road comes down from bluff, southeast point of small ridge, 2,000 feet southeast of highest point of bluff; iron post stamped "3965 Dw"----- | 3, 967. 043 |
| Crawford's ranch, 7.7 miles northeast of, 6.5 miles northwest of mouth of Stockade Beaver Creek, 20 feet south of Sheep Creek road; iron post stamped "3891 Dw"----- | 3, 893. 117 |
| Crawford's ranch, 10.4 miles northeast of, 3.3 miles west of mouth of Stockade Beaver Creek, top of divide between Beaver and Sheep creeks, 5 feet south of road; iron post stamped "3927"----- | 3, 929. 271 |
| Stockade Beaver Creek, 1.5 miles west of mouth of, top of small ridge, 15 feet north of road; iron post stamped "3776 Dw"----- | 3, 778. 158 |

| | Feet. |
|---|-------------|
| Stockade Beaver Creek, 700 feet southeast of junction with main Beaver Creek, 700 feet southeast of irrigation company's house and dam, south side of road, at fence corner; iron post stamped "3708 Dw"----- | 3, 709. 715 |
| Stockade Beaver Creek, 2.1 miles north of mouth of, 700 feet east of gate in wire fence, 25 feet north of road in draw; iron post stamped "3789 Dw"----- | 3, 790. 776 |
| Irrigation company's house, 0.5 mile south of, 1,200 feet south of south end of dam at lake, 3.7 miles north of mouth of Stockade Beaver Creek, 25 feet east of road; iron post stamped "3843 Dw"----- | 3, 845. 651 |
| Baird's ranch, 0.5 mile east of, 13 feet west of southeast corner of NE. $\frac{1}{4}$ sec. 1, T. 42 N., R. 61 W., 20 feet west of road; iron post stamped "3914 Dw"----- | 3, 916. 635 |
| Clifton siding, 2.7 miles northwest of, 1,000 feet northwest of center of railroad bridge over Whoop-up Canyon, 60 feet east of railroad, 30 feet west of Edgemont-Newcastle wagon road; iron post stamped "3971 Dw"----- | 3, 972. 728 |
| Clifton siding, 5.8 miles northwest of, 30 feet northwest of railroad crossing, 270 feet south of railroad bridge, at junction of road from west with Edgemont-Newcastle road; iron post stamped "4043 Dw"----- | 4, 044. 825 |
| Clifton siding, 8.5 miles northwest of, 50 feet northwest of railroad crossing on Edgemont-Newcastle road; iron post stamped "4120 Dw"----- | 4, 121. 891 |
| Spencer siding, 45 feet southeast of road crossing; iron post stamped "4195 Dw"----- | 4, 196. 780 |
| Newcastle, 3 miles east of; iron post stamped "4344 Dw"----- | 4, 346. 432 |

From mouth of Stockade Beaver Creek to point near S. & G. ranch.

| | |
|---|-------------|
| S. & G. ranch, 2.9 miles west of, 50 feet northeast of bridge over main irrigation ditch, 40 feet north of irrigation ditch; iron post stamped "3683 Dw"----- | 3, 685. 627 |
| S. & G. ranch, 2.3 miles west of, south side of road; wire nail in root of 24-inch pine tree----- | 3, 801. 45 |
| S. & G. ranch, 1.2 miles west of, north side of road on top of ridge; wire nail in root of 15-inch pine----- | 3, 830. 35 |

From Sheep Creek north to bridge over Beaver Creek.

| | |
|---|-------------|
| South Beaver and Main Beaver creeks, 2.8 miles west by 0.4 mile north of junction of, center of small circular mound; iron post stamped "3831 Dw"----- | 3, 833. 210 |
| Oil Creek, 2.3 miles southeast of, 8 miles northwest of mouth of Stockade Beaver Creek, 60 feet west of wagon road; iron post stamped "3820 Dw"----- | 3, 822. 163 |
| Oil Creek, 0.4 mile east of mouth of, 30 feet west of junction of Main Beaver Creek road with Newcastle road; iron post stamped "3829 Dw"----- | 3, 831. 050 |
| Oil Creek, 8 miles northwest of mouth of, top of low flat ridge, 20 feet east of road; iron post stamped "3862 Dw"----- | 3, 864. 160 |
| Oil Creek, 6.3 miles northwest of mouth of, 0.5 mile northeast of mouth of Mush Creek, south side of low flat ridge, 20 feet east of road; iron post stamped "3869 Dw"----- | 3, 891. 208 |

From Oil Spring to Beaver Creek Bridge via Jones and Y T ranches and Osage.

| | Feet. |
|---|-------------|
| Kilpatrick's ranch, 0.8 miles south of, 85 feet southwest of railroad crossing, 25 feet west of wagon road; iron post stamped "4171 Dw" ----- | 4, 173. 279 |
| Jones's ranch, 1 mile north of, east side of Oil Canyon, on east side of road, foot of sandstone cliff, in sandstone 6 by 15 feet and 6 feet high at west end; bronze tablet stamped "4389 Dw" (on spur north)----- | 4, 391. 257 |
| Sundance and Osage roads, junction of, 2.3 miles southeast of Y T ranch, top of divide between Oil and Skull creeks, 25 feet south of road; iron post stamped "4282 Dw" (on spur north)----- | 4, 284. 278 |
| Y T ranch, 10 feet north of dwelling, 60 feet west of Skull Creek, south side of road; iron post stamped "4218 Dw"----- | 4, 220. 201 |
| Osage, 0.5 mile south of, 75 feet east of railroad crossing, 25 feet north of wagon road; iron post stamped "4312 Dw"----- | 4, 314. 227 |
| Turner Creek, 0.5 mile southeast of mouth of, 1 mile east of Beaver Creek; iron post stamped "4066 Dw"----- | 4, 068. 129 |
| Turner Creek, about 2.3 miles southeast of mouth of, 1 mile southeast of Beaver Creek Ford, 25 feet northeast of road; iron post stamped "4020 Dw"----- | 4, 022. 148 |
| Beaver Creek bridge 7.4 miles northwest of, 0.5 mile northeast of mouth of Fidler Creek, top of ridge, 20 feet east of road; iron post stamped "4002 Dw"----- | 4, 004. 114 |
| Beaver Creek bridge, 4.4 miles northwest of, 2.5 miles southeast of mouth of Fidler Creek, 20 feet east of road; iron post stamped "3973 Dw"----- | 3, 975. 139 |

From Newcastle north to Cambria (spur line).

| | |
|--|-------------|
| Newcastle Water Co.'s reservoir, 0.4 mile northeast of, 4 feet north-east of railroad crossing; iron post stamped "4625 Dw"----- | 4, 627. 267 |
| Cambria, west end of, in canyon, 15 feet south of Kilpatrick's cottage, 125 feet west of Burlington Route, main track, 200 feet west of coal company's main office; iron post stamped "5100 Dw"----- | 5, 102. 171 |

From Thompson's ranch at Antelope Springs, S. Dak., west to Beaver Creek, Wyo., thence south to Sweet & Davis's sawmill, thence west to bench mark 3 miles east of Newcastle.

| | |
|--|-------------|
| Vall's ranch, 0.4 mile southwest of, north side of road at foot of hill, below Dakota-Wyoming State line; iron post stamped "5733 Dw"----- | 5, 735. 363 |
| Thompson's ranch, 1,000 feet northeast of, 50 feet east of intersection of roads to Newcastle, Antelope Springs, and up Beaver Creek, in limestone 3 by 2 feet and 6 inches high; bronze tablet stamped "4788 Dw"----- | 4, 790. 779 |
| Fawcett's ranch, 0.3 mile north of, east side of road, at foot of rough limestone bluff 75 feet high, in limestone boulder 4 by 4 feet and 1½ feet high; bronze tablet stamped "4637 Dw"----- | 4, 639. 300 |
| Sweet & Davis's sawmill, 1.3 miles west of, 175 feet east of divide between Beaver and Salt creeks, in sandstone 6 feet in diameter and 2½ feet high, on south side of road; bronze tablet stamped "4601 Dw"----- | 4, 603. 376 |
| L A K ranch, 75 feet east of, south side of road; iron post stamped "4308 Dw"----- | 4, 310. 350 |

| | Feet. |
|--|-------------|
| L. A. K. ranch, 3.4 miles southeast of, 340 feet northwest of intersection of road up Redbird Canyon with Newcastle-Custer road, 75 feet west of road, in rock ledge; bronze tablet stamped "4487 Dw"----- | 4, 489. 403 |

SUNDANCE QUADRANGLE.

[Latitude 44°-44° 30'; longitude 104°-104° 30'.]

From Cold Spring down Cold Spring Canyon to Lost Canyon, Hain's ranch, thence via Grand Canyon to Rattlesnake Canyon and over Cement Ridge to Pratt's (Bear Gulch post office), thence to Power's sawmill.

This circuit closed with an error of 1.4 feet, which was distributed and the circuit not rerun.

| | |
|--|-------------|
| Whitman's ranch, 600 feet southeast of, 400 feet east of forks of road to McQuaig, 50 feet north of road, in flat limestone rock 3 by 6 feet; bronze tablet stamped "6110 Dw"----- | 6, 112. 238 |
| Sawyer's ranch, 150 feet north of, 20 feet above spring, in limestone ledge; bronze tablet stamped "5878 Dw"----- | 5, 890. 329 |
| Fleming's ranch, 2 miles southeast of, 25 feet west of road, in root of 15-inch pine tree; copper nail----- | 5, 787. 37 |
| Fleming's ranch, 700 feet west of, 25 feet west of road; iron post stamped "5670 Dw"----- | 5, 672. 056 |
| Fleming's ranch, 1.7 miles northeast of, on west side of road, in root of 15-inch pine tree; copper nail----- | 5, 740. 10 |
| Fleming's ranch, 2.7 miles northeast of, in rock 3 by 3 feet and 2 feet high; bronze tablet stamped "5867 Dw"----- | 5, 868. 924 |
| Hain's ranch, 0.3 mile southeast of, east side of road, near rocky point on northwest side of intersection of three ravines, in limestone rock 2 by 2 feet; bronze tablet stamped "6177 Dw"----- | 6, 179. 737 |
| Hain's ranch, 0.7 mile north of, on east side of road, in root of 20-inch pine tree; copper nail----- | 6, 258. 81 |
| Endicott's ranch, 0.7 mile north of, 125 feet east of road, in root of 20-inch pine tree; copper nail----- | 6, 165. 21 |
| Endicott's ranch, 1.8 miles north of; iron post stamped "6063 Dw"----- | 6, 064. 643 |
| Endicott's ranch, 4.3 miles north of, on north side of road, in root of 30-inch pine tree; copper nail----- | 5, 802. 33 |
| Simpson's ranch, 30 feet northeast of, east side of Grand Canyon, in sandstone rock near foot of hill; bronze tablet stamped "5740 Dw"----- | 5, 741. 569 |
| Simpson's ranch, 1.1 miles northwest of, on west side of road, in root of 24-inch pine tree; copper nail----- | 5, 641. 40 |
| Wood's ranch, 215 feet south of, middle of canyon, in sandstone rock 2 by 4 feet and 18 inches high; bronze tablet stamped "5459 Dw"----- | 5, 460. 507 |
| Wood's ranch, 1.7 miles northwest of, mouth of Rattlesnake Canyon, north side of canyon; iron post stamped "5340 Dw"----- | 5, 341. 381 |
| Wood's ranch, 5.3 miles northeast of, north of road, in limestone rock 8 by 6 feet and 18 inches high; bronze tablet stamped "5912 Dw"----- | 5, 913. 324 |
| Wood's ranch, 7.1 miles northeast of, top of Cement Ridge, north of road, in root of 12-inch pine tree; copper nail----- | 6, 536. 71 |
| Wood's ranch, 7.5 miles northeast of, 2.1 feet southeast of closing corner of line common to Tps. 4 and 5 N., R. 1 E., on Wyoming-Dakota line, 0.25 mile south of road; iron post stamped "6304 Dw"----- | 6, 305. 165 |

| | Feet. |
|---|-------------|
| Wood's ranch, 7.8 miles northeast of, 200 feet north of Lone Grave, on east side of road, in root of 12-inch pine tree; copper nail----- | 6, 259. 57 |
| Wood's ranch, 8.5 miles northeast of, 1.5 miles southeast of Welcome, 25 feet east of intersection of Welcome post office, Bear Gulch post office, and Cement Ridge roads, 25 feet west of State line; iron post stamped "6238 Dw"----- | 6, 239. 124 |

Bald Mountain, Cloud Peak, Dayton, Fort McKinney, No Weed, Bairden, and Sheridan quadrangles.

BIG HORN, JOHNSON, AND SHERIDAN COUNTIES.

The following elevations were determined by primary leveling forming part of an adjusted net across the State between the precise level lines of the Coast and Geodetic Survey along the Chicago, Burlington & Quincy and the Union Pacific railroads in agreement with the 1912 adjustment of precise leveling. The adjustment required corrections of 1.9 feet orthometric and 1.7 additional. The field work was mostly dependent on an assumed railroad datum at Sheridan and the majority of the bench marks are stamped "Sher." Most of the marked elevations are 10 feet too low. The descriptions of these are taken from the appendixes to the Nineteenth and Twenty-first Annual Reports. Most of the bench marks set later were stamped 3 feet too high, in accordance with preliminary corrections.

The leveling was done in Sheridan quadrangle in 1897 by W. L. Kemp, A. L. Coleman, and H. W. Huntington; in 1897-98-99 by E. W. Glafcke; and in 1909 by C. F. Fisher, H. G. Parry, and F. H. West; in Dayton quadrangle in 1897 by A. L. Coleman and H. W. Huntington, in 1898 by C. E. Worthington, and in 1897 and 1899 by E. W. Glafcke; in Bald Mountain quadrangle in 1897 by H. W. Huntington, in 1898 by C. E. Worthington, and in 1899 by E. W. Glafcke; in Fort McKinney quadrangle in 1897 by H. W. Huntington and in 1897-98-99 by E. W. Glafcke; in Cloud Peak and No Wood quadrangles in 1897 by E. W. Glafcke; and in Bairden quadrangle in 1897 by E. W. Glafcke, in 1904 by H. M. Huntington, and in 1905 by F. A. Nussle.

BALD MOUNTAIN QUADRANGLE.

[Latitude 44° 30'-45°; longitude 107° 30'-108°.]

From point 6.5 miles northeast of McCullough's Road ranch west up Tongue River Road to Little Bald Mountain, thence northward to Willow Springs.

| | Feet. |
|--|-------------|
| T. 56 N., R. 88 W., north side of sec. 18, 100 feet south of Granger Ditch, on divide between Dry Fork of Little Horn River and Fools Creek, 15 feet south of road; iron post stamped "7469 Sher"----- | 7, 479. 560 |
| T. 55 N., R. 89 W., quarter corner between secs. 3 and 4, 1 mile west by 0.5 mile south of McCullough's road ranch, 400 feet south of road; iron post stamped "8124 Sher"----- | 8, 134. 750 |
| T. 55 N., R. 90 W., 100 feet southeast of northwest corner of sec. 23, 50 feet south of road; iron post stamped "8446 Sher"----- | 8, 456. 782 |

| | Feet. |
|---|--------------|
| T. 55 N., R. 90 W., NW. $\frac{1}{4}$ sec. 16, 4 miles east of Little Bald Mountain, 20 feet north of road, 300 feet east of Tongue River, 600 feet north of crossing of small stream; iron post stamped "8670 Sher"----- | 8, 681. 270 |
| Little Bald Mountain, at east foot of, sec. 12, T. 55 N., R. 91 W., south side of, at junction of Bald Mountain and Shell wagon road, 15 feet west of Bald Mountain road; iron post stamped "9171 Sher"----- | 9, 182. 000 |
| Little Bald Mountain, on top of, sec. 2, T. 55 N., R. 91 W., 0.25 mile northeast of signal station, 15 feet north of road; iron post stamped "9829 Sher"----- | 9, 839. 604 |
| Bald Mountain, on top of, T. 56 N., R. 91 W., sec. 32, 10 feet west of U. S. land monument; iron post stamped "10034 Sher"----- | 10, 041. 462 |
| Bald Mountain City, 2.5 miles west of, sec. 28, T. 56 N., R. 91 W., on divide between Porcupine Creek and Middle Fork of Little Horn River, 20 feet south of road junction; iron post stamped "9209 Sher" (on spur line)----- | 9, 219. 951 |
| Bald Mountain City, sec. 27, T. 56 N., R. 91 W., in rock; aluminum tablet stamped "8907 Sher"----- | 8, 918. 057 |
| Bald Mountain City, 400 feet east of, at angle of road; iron post stamped "8912 Sher"----- | 8, 919. 691 |
| Duncom Mountain, on top of, sec. 6, T. 56 N., R. 91 W., 3 miles north of Fortunatus Mill, in side of rock 150 feet east of road; aluminum tablet stamped "9810 Sher"----- | 9, 821. 006 |
| Duncom Mountain, 3 miles north of, on divide between Little Horn River and head of Trout Creek, 20 feet west of road; iron post stamped "9566 Sher"----- | 9, 576. 720 |
| Duncom Mountain, 5.5 miles north of, in saddle on divide between head of Lodgegrass Creek and head of Trout Creek, 1,000 feet west of Little Horn wagon road, in rock level with ground, 20 feet south of large mound of rock; aluminum tablet stamped "9327 Sher"----- | 9, 337. 816 |
| Duncom Mountain, 5.5 miles north of, in same rock as previous bench mark; copper bolt set by Tweedy----- | 9, 337. 800 |
| Lodgegrass Creek, 2 miles southwest of, at spring on hill, on high divide 25 feet south of road; iron post stamped "9021 Sher"----- | 9, 032. 030 |
| Red Spring, 1.8 miles northwest of, on high ridge, 30 feet south of road; aluminum tablet stamped "8600 Sher"----- | 8, 610. 132 |
| Willow Spring, 1 mile southwest of, 25 feet south of road, 4.8 miles from Ed. Town ranch; iron post stamped "7151 Sher"----- | 7, 161. 129 |
| From point 2 miles northeast of McCullough's Road ranch south to Willow Creek. | |
| T. 55 N., R. 89 W., at quarter corner between secs. 35 and 36, 1.5 miles northeast of McCullough's road ranch; iron post stamped "7885 Sher"----- | 7, 895. 119 |
| T. 55 N., R. 89 W., at southeast corner of sec. 12, 200 feet west of road; iron post stamped "8183 Sher"----- | 8, 193. 965 |
| T. 55 N., R. 88 W., 1.2 miles north by 0.6 mile east of southwest corner of sec. 12, 25 feet east of road, 100 feet east of grove of timber; iron post stamped "8433 Sher"----- | 8, 443. 977 |
| From Little Bald Mountain south along road to point 5 miles southeast of Shell. | |
| Little Bald Mountain, 3 miles south of, 25 feet west of road; aluminum tablet stamped "8957 Sher"----- | 8, 968. 059 |

An excessive error was distributed in this line.

| | Feet. |
|--|-------------|
| Little Bald Mountain, 5.8 miles southwest of, 400 feet north of small stream, 20 feet east of road; aluminum tablet stamped "8989 Sher"----- | 8, 950. 101 |
| Little Bald Mountain, 9.2 miles south of, in T. 54 N., R. 91 W., 5 feet south of road; aluminum tablet stamped "7917 Sher"----- | 7, 928. 330 |
| T. 54 N., R. 91 W., sec. 3 (unsurveyed), 2.8 miles northeast of William Hunt's ranch, 10 feet south of road; aluminum tablet stamped "6877 Sher"----- | 6, 888. 097 |
| T. 55 N., R. 91 W., 290 feet west by 110 feet north of quarter corner south side of sec. 33, 300 feet south of William Hunt's house, 20 feet west of road; aluminum tablet stamped "5923 Sher"----- | 5, 933. 360 |
| T. 54 N., R. 91 W., sec. 16, 3 miles south of William Hunt's ranch, 20 feet west of road, in Red Canyon, 3.5 miles north of Peter Ender's ranch; iron post stamped "5100 Sher"----- | 5, 110. 519 |
| T. 54 N., R. 91 W., 12.7 feet west of southeast corner of sec. 32, at southwest corner of Peter Ender's ranch, 15 feet east of road; iron post stamped "4516 Sher"----- | 4, 526. 375 |
| T. 53 N., R. 91 W., NE $\frac{1}{4}$ sec. 22, 2.25 miles north of Shell, 600 feet west of crossing of Horse Creek, north side of road, 300 feet southwest of schoolhouse; iron post stamped "4425 Sher"----- | 4, 435. 740 |
| Shell, 400 feet east by 200 feet south of post office, 20 feet south by 20 feet east of wagon road, 750 feet southwest of crossing of Shell Creek, SE $\frac{1}{4}$ sec. 26, T. 53 N., R. 91 W.; iron post stamped "4182 Sher"----- | 4, 192. 608 |
| T. 52 N., R. 91 W., sec. 1, 3.8 miles southeast of Shell, 0.5 mile south of Hatton ranch, 500 feet west of Trapper Creek, 20 feet west of wagon road; iron post stamped "4443 Sher"----- | 4, 453. 769 |
| From point 3.5 miles southwest of Stack west to Taylor's ranch (Little Big Horn Canyon). | |
| West Pass Creek, 1 mile west of, on top of divide between West Pass and Gray Creeks, 0.8 mile south of Rose Dana's ranch house, 10 feet north of road, beside large mound of rocks, in limestone boulder; aluminum tablet stamped "5177 Sher"----- | 5, 186. 672 |
| Little Bighorn River, 3 miles southeast of, on top of divide at head of Red Gulch, at forks of road; iron post stamped "5191 Sher"----- | 5, 200. 578 |
| Ed. Town's ranch house, 300 feet northwest of Red Gulch, 0.5 mile south of Montana-Wyoming State line, northeast side of road; iron post stamped "4453 Sher"----- | 4, 462. 420 |
| Taylor's ranch, 0.5 mile south of, in Little Bighorn Canyon, 0.5 mile south of Montana-Wyoming State line, southeast side of pack trail; iron post stamped "4442 Sher"----- | 4, 451. 737 |

CLOUD PEAK QUADRANGLE.

[Latitude 44°-44° 30'; longitude 107°-107° 30'.]

From point 2.5 miles southwest of Smith's ranch along East Tensleep Lake Road west and north to East Fork of East Tensleep Creek, thence east via Muddypass to Poison Creek Road.

| | |
|--|-------------|
| Doyle Creek, 1 mile west of crossing of, top of divide between Doyle Creek and Powder River, 30 feet southwest of road, in granite boulder; bronze tablet stamped "8812 Sher"----- | 8, 822. 306 |
| North Fork of Powder River, 350 feet east of public road crossing, 25 feet south of road, in granite boulder; bronze tablet stamped "8548 Sher"----- | 8, 553. 133 |

| | Feet. |
|---|-------------|
| Canyon Creek, 900 feet south of crossing, on brow of hill above creek, 20 feet southwest of road, in granite ledge, beside mound of rock; bronze tablet stamped "9089 Sher"----- | 9, 078. 853 |
| Canyon Creek, 1.5 miles north of crossing, 1,000 feet south of crossing of northwest branch of Canyon Creek, 30 feet east of road, in granite boulder, beside mound of rocks; bronze tablet stamped "9212 Sher"----- | 9, 220. 766 |
| East Tensleep Lakes, about 4 miles south of, 0.5 mile due south of East Fork of Tensleep Creek, top of divide bounding Tensleep Creek basin, 20 feet west of road, in granite boulder, beside mound of rocks; bronze tablet stamped "9568 Sher"----- | 9, 577. 705 |
| Canyon Creek and Lee Creek divide, 2.5 miles northwest of saddle where road crosses summit of range, in large granite boulder, beside mound of rocks; bronze tablet stamped "9851 Sher"----- | 9, 860. 790 |
| Muddy Pass road, 0.5 mile east of intersection with trail to East Tensleep Lake, in saddle on summit of range, 300 feet north of road, in granite boulder; bronze tablet stamped "9666 Sher"----- | 9, 675. 871 |
| Muddy Pass, 1 mile east of, in heavy timber, 6 feet west of road, in granite boulder with mound of rocks around it; bronze tablet stamped "8872 Sher"----- | 8, 861. 670 |
| From stage road 1 mile south of crossing of North Fork of Powder River to Point 2.5 miles southwest of Smith's Ranch. | |
| Smith's ranch, 7.5 miles southwest of, on divide between Canyon Creek and Powder River, 0.5 mile west of Powder River, 15 feet northwest of road, in quartzite ledge; bronze tablet stamped "8337 Sher"----- | 8, 347. 266 |
| Smith's ranch, 3.5 miles southwest of, 2 miles due south of "Three Sisters" Peak, 3 miles east of North Fork of Powder River, 15 feet north of stage road, in granite boulder; copper bolt stamped "8381 Sher"----- | 8, 391. 072 |
| From stage road south of crossing of North Fork of Powder River northwest along Ridge Road 7 miles to junction of road east to Smith's ranch. | |
| Powder River-Tensleep Lake road, 3 miles north of point where it intersects Buffalo-Hyattsville road, on divide ridge between North Fork of Powder River and first gulch south of Onion Gulch, tributary to Canyon Creek, 125 feet west of road, in granite boulder; bronze tablet stamped "8429 Sher"----- | 8, 439. 217 |
| Onion Gulch-Powder River divide, 15 feet west of road, in granite boulder; copper bolt stamped "8604 Sher"----- | 8, 614. 256 |
| Near Trapper Corner. | |
| Trapper Corner, 50 feet southeast of, 30 feet east of road, in limestone rock with large mound of rocks around it; copper bolt stamped "8594 Sher"----- | 8, 604. 616 |
| From Wickware ranch northeast along road to Paintrock Lakes (double run line). | |
| County road and Moccasin ranch road, 0.5 mile north of junction of, 0.2 mile due west of large bunch of small pine trees about where road leaves cedar timber going north, behind small bushes at foot of limestone ledge on east side of road; aluminum tablet stamped "8418 Sher"----- | 6, 428. 300 |

| | Feet. |
|---|-------------|
| Paintrock Lakes road and Rhinehart's sawmill road, in fork at junction of, on top of mountain, in large granite bowlder; aluminum tablet stamped "8304 Sher"----- | 8, 314. 612 |
| Sawmill, 1.5 miles northeast of, 30 feet north of road, on edge of small timber, trees trimmed all around point, in large granite bowlder; bronze tablet stamped "8670 Sher"----- | 8, 680. 405 |
| Paintrock Lakes, 2.5 miles south of, near top of divide between Medicine-lodge and Paintrock creeks, 0.8 mile southwest of point where road enters strip of timber, 20 feet east of road, in limestone ledge beside mound of rock; aluminum tablet stamped "9309 Sher"----- | 9, 319. 323 |
| Paintrock Lakes, 1.5 miles southwest of, on divide between Medicine-lodge and Paintrock creeks, 300 feet east of where road turns from north to east, 10 feet north of road, in edge of timber, trees trimmed and blazed all around, in granite bowlder; aluminum tablet stamped "9223 Sher"----- | 9, 233. 362 |
| From point near forks of Brokenback Creek southeast along stage road to point 6 miles southeast of Tensleep. | |
| T. 48 N., R. 89 W., 150 feet northwest of center of sec. 15, in front yard of ranch of Mr. William, on Brokenback Creek, 100 feet east of Buffalo-Hyattsville stage road; iron post stamped "4522 Sher"----- | 4, 532. 340 |
| Tensleep Creek, 3 miles northwest of, on divide between Tensleep and Brokenback creeks, 30 feet west of road; iron post stamped "5026 Sher"----- | 5, 036. 359 |
| Tensleep, 25 feet north of stage road, 300 yards south of Tensleep Creek, 100 feet directly south of ranch building owned by Mr. Sutherland; iron post stamped "4513 Sher"----- | 4, 523. 404 |
| Tensleep, 2.6 miles southeast of, top of divide between Tensleep and Canyon creeks, 20 feet southwest of road; iron post stamped "5097 Sher"----- | 5, 107. 602 |
| Tensleep, 5.8 miles southeast of, in saddle overlooking valley of Canyon Creek, 0.5 mile to north, 0.5 mile south of Hunsinger ranch house, 500 feet north of fence corner, 15 feet east of stage road; iron post stamped "5025 Sher"----- | 5, 035. 281 |

DAYTON QUADANGLE.

[Latitude 44° 30'–45°; longitude 107°–107° 30'.]

From Sheridan northwest along highway to Dayton, thence west over Freezeout Mountain.

| | |
|---|-------------|
| T. 56 N., R. 84 W., sec. 20, 2.8 miles northwest of Sheridan, 20 feet east of road, in saddle on divide between Goose and Soldier creeks; iron post stamped "4087 Sher"----- | 4, 096. 622 |
| T. 56 N., R. 85 W., sec. 23, 5.5 miles northwest of Sheridan, 0.5 mile east of Keer's ranch, 100 feet west of road, at corner of wire fence; iron post stamped "3980 Sher"----- | 3, 989. 483 |
| T. 56 N., R. 85 W., sec. 21, 8.4 miles northwest of Sheridan, 30 feet east of road at corner of fence, 0.2 mile west of Emmon's ranch; iron post stamped "4162 Sher"----- | 4, 171. 448 |
| T. 56 N., R. 85 W., sec. 19, 10.9 miles northwest of Sheridan, on divide between Soldier and Wolf creeks, 15 feet west of road; iron post stamped "4423 Sher"----- | 4, 432. 531 |
| Wolf, 30 feet west of road, in front of schoolhouse, 300 feet south of Garrard and Snyder's ranch; iron post stamped "4109 Sher"----- | 4, 118. 457 |

| | Feet. |
|--|-------------|
| T. 56 N., R. 86 W., sec. 16, 2.6 miles northwest of Wolf, on divide between Wolf Creek and Tongue River, 20 feet west of road; iron post stamped "4460 Sher"----- | 4, 469. 481 |
| Dayton, 75 feet south of road, at corner post of wire fence, 150 feet south of Baker's store; iron post stamped "3916 Sher"----- | 3, 926. 146 |
| T. 57 N., R. 87 W., sec. 24, 3 miles northwest of Dayton, 0.8 mile west of Mr. Mack's house, north side of road, at southwest corner of Mr. Mack's pasture fence; iron post stamped "4374 Sher"----- | 4, 383. 292 |
| T. 57 N., R. 87 W., sec. 20, 6.7 miles west of Dayton, 0.2 mile west of Van Ness's road ranch, 0.2 mile east of junction of Dayton and Parkman road, 10 feet north of road; iron post stamped "5115 Sher"----- | 5, 124. 254 |
| T. 57 N., R. 87 W., sec. 29, 8.8 miles west of Dayton, 0.5 mile southwest of divide between Columbia and Smith creeks, 30 feet south of road, in sandstone rock; tablet stamped "5739 Sher"----- | 5, 749. 213 |
| T. 57 N., R. 88 W., sec. 36 (unsurveyed), 15 feet south of road, 0.2 mile east of triangulation station on Freezeout Mountain, in Rock 10 by 10 by 3 feet; bronze tablet stamped "7318 Sher"----- | 7, 823. 484 |

From Willow Creek south over Big Horn Mountain to Willitt Creek.

| | |
|---|-------------|
| T. 54 N., R. 88 W., sec. 17, 14.5 miles south of McCullough's road ranch, on divide between South Fork of Tongue River and head of Willow Creek, 1 mile north of crossing of South Fork of Tongue River, 40 feet east of wagon road; iron post stamped "8915 Sher"----- | 8, 926. 003 |
| T. 54 N., R. 88 W., sec. 29, 15 miles south of McCullough's road ranch, 1.5 miles south of crossing of South Fork of Tongue River, on high ridge, 40 feet east of road; aluminum tablet stamped "9050 Sher"----- | 9, 061. 000 |
| T. 54 N., R. 88 W., sec. 33, 17.5 miles south of McCullough's road ranch, on divide between two small streams and 2 miles northeast of Hyattsville road, 20 feet west of road; iron post stamped "9320 Sher"----- | 9, 330. 986 |

From Dayton along road northwest through Parkman to Pass, thence west to point about 3.5 miles southwest of Stack post office.

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|---|-------------|
| T. 57 N., R. 86 W., sec. 18, 0.5 mile northwest of Columbus Creek, 15 feet east of road, at northwest corner of pasture fence; iron post stamped "4157 Sher"----- | 4, 166. 260 |
| T. 57 N., R. 86 W., sec. 7, 200 yards east of Ohlman, northwest corner of W. Wagner's pasture, at forks of road, 100 yards west of Ohlman's schoolhouse, 200 yards south of Chicago, Burlington & Quincy R. R. tracks; iron post stamped "4138 Sher"----- | 4, 147. 505 |
| Parkman, southwest corner of post office on Main Street; iron post stamped "4292 Sher"----- | 4, 301. 510 |
| Pass, 100 yards north of old post office and road ranch, sec. 22, T. 58 N., R. 87 W., at southeast corner of Bale's ranch, 250 yards west of Chicago, Burlington & Quincy R. R. tracks; iron post stamped "4116 Sher"----- | 4, 125. 556 |
| Stack, 1 mile northeast of, 100 yards north of East Pass Creek, inside northwest corner of fence around Powers's ranch residence; iron post stamped "4510 Sher"----- | 4, 519. 948 |

Feet.

Stack, 2 miles west of, 250 feet southwest of schoolhouse 19, at forks of roads and foot of divide between East and West Pass creeks, at northwest corner of fence; iron post stamped "4789 Sher"----- 4,798.891

Near Pass east on coal mine road. (Spur line.)

T. 58 N., R. 86 W., sec. 17, 1.25 miles east of Bakers' ranch, on divide between Owl and Sixmile creeks, 0.2 mile south of Montana-Wyoming boundary, 50 feet north of road; iron post stamped "4496 Sher"----- 4,505.263

From Dayton east down Tongue River to point near Higby.

T. 57 N., R. 86 W., 3 miles west of Ranchester, at forks of road to Bingham and Dayton, 0.5 mile north of Tongue River; iron post stamped "3839 Sher"----- 3,847.924

Bingham, old post office, 150 yards northwest of, sec. 36, T. 57 N., R. 86 W., 25 feet west of road, 300 feet west of ford at Wolf Creek; iron post stamped "3887 Sher." (This bench mark is on a spur line 3 miles.)----- 3,896.026

T. 57 N., R. 86 W., sec. 4, 4.4 miles northwest of Ranchester, northwest reference mark of Ranchester base, 1,300 feet west of western extremity of the first tangent west of Ranchester, two poles west of mile post 770, 27 feet north of center of Burlington Route track, 3 feet below grade; iron post not stamped.----- 4,014.398

Ranchester, 0.6 mile west of station, Ranchester southeast base, 330 feet east of a highway crossing, 20 feet south of center of Burlington Route track, in top of post of soft red sandstone 6 by 6 inches set in ground with 3 inches exposed; chiseled square, marked "U.S.B.M.,C.&G.S. 1908"----- 3,791.236

Ranchester, 0.6 mile west of station, 19 feet south of Ranchester southeast base, 40 feet south of center of Burlington Route track, north of snow fence; iron post not stamped.----- 3,791.157

Ranchester, northwest corner of Main and Payton streets, 114 feet south of schoolhouse, near southeast corner of McShane & Co.'s store building; iron post stamped "3751 Sher." (The position of this post when connected with by Coast and Geodetic Survey was 8 feet further north at same elevation)----- 3,759.914

T. 57 N., R. 85 W., sec. 15, 3 miles east of Ranchester, northeast corner of Burlington Route right of way fence, 35 feet north of railroad; near cattle guard; iron post stamped "3698 Sher"----- 3,707.502

T. 57 N., R. 84 W., sec. 18, 100 feet west of Slater Creek, at junction of crossroads, 400 feet due south of Bob Hay's ranch building, 50 feet north of crossing of Burlington Route tracks; iron post stamped "3660 Sher"----- 3,669.189

Higby, 1 mile northwest of, sec. 28, T. 57 N., R. 84 W., on divide between Goose and Day creeks, 25 feet north of road; iron post stamped "3893 Sher"----- 3,902.374

From mouth of Slater Creek north to Hiddenwater Creek.

T. 58 N., R. 85 W., sec. 35, 1 mile north of Hiddenwater Creek Springs, on hill 400 feet east of road, near top of divide between Hiddenwater and Ash creeks, in ledge of rock (6-foot mound of rock 8 feet south); bronze tablet stamped "4307 Sher"----- 4,315.404

From Sheridan along highway southwest to Beckton, thence northwest to point near Wolf.

| | Feet. |
|--|-------------|
| T. 56 N., R. 84 W., sec. 31, 3.2 miles northwest of Sheridan, 20 feet north of road up Big Goose Creek, on south slope of bench above Big Goose Creek; iron post stamped "3870 Sher"----- | 3, 879. 319 |
| T. 55 N., R. 85 W., sec. 2, 6.3 miles northwest of Sheridan, 50 feet west of and between forks of Owl Creek and Big Goose Creek roads, at fence corner, 200 feet due east of ranch house; iron post stamped "3926 Sher"----- | 3, 935. 418 |
| T. 55 N., R. 85 W., sec. 9, 1.5 miles east of Beckton, 30 feet north of road at confluence of Rapid Creek and Big Goose Creek, on point of hill; iron post stamped "4015 Sher"----- | 4, 024. 854 |
| Beckton, 300 yards northwest of post office, at northwest corner of fence, near junction of Big Goose Creek and Dayton road; iron post stamped "4085 Sher"----- | 4, 094. 554 |
| T. 56 N., R. 86 W., sec. 36, 2.7 miles northwest of Beckton, 200 feet south of Soldier Creek, 50 feet west of road, 0.2 mile above P.K. ranch; iron post stamped "4478 Sher"----- | 4, 487. 715 |
| T. 56 N., R. 86 W., sec. 27, 5.5 miles northwest of Beckton, 25 feet east of road, in lane; iron post stamped "4278 Sher"----- | 4, 287. 618 |

From Bighorn along highway west to Bighorn Mountains, thence south toward Trapper Corner.

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|--|-------------|
| T. 54 N., R. 85 W., sec. 27, 7.6 miles southwest of Bighorn, 1,000 feet northeast of Big Springs, 20 feet west of road, 300 feet east of creek, at foot of grade, in large limestone boulder 4 feet high; copper bolt stamped "5749 Sher"----- | 5, 759. 404 |
| T. 54 N., R. 85 W., sec. 29, 5.5 miles east of Morrow stage station, 50 feet south of road, in limestone rock 30 by 50 by 40 feet; copper bolt stamped "7423 Sher"----- | 7, 433. 782 |
| T. 54 N., R. 86 W., 1.7 miles east of Morrow stage station, 150 feet southeast of wagon bridge on Rapid Creek, in top of large granite rock 12 feet high, near northwest face; copper bolt stamped "7443 Sher"----- | 7, 454. 008 |
| T. 54 N., R. 86 W., 2 miles west of Morrow stage station, 50 feet east of timber in first large open park west of Big Goose Creek, in granite boulder 2.5 feet high, 5 feet long, 4 feet wide; copper bolt stamped "7847 Sher"----- | 7, 858. 237 |
| Dome Lake, sec. 11, T. 53 N., R. 87 W., 54 feet north of northeast corner of club house, in 4 by 6 foot granite boulder; bronze tablet stamped "8821 Sher". (On spur line.)----- | 8, 831. 701 |
| T. 54 N., R. 87 W., 5 miles west of Morrow stage station, 300 feet above and west of bridge across branch of Goose Creek, 5 feet southwest of road, in large morainal boulder; copper bolt stamped "7998 Sher"----- | 8, 008. 962 |
| T. 54 N., R. 87 W., 10 miles west of Morrow stage station, on top of divide between Big Goose Creek and Tongue River, 300 feet north of road, in 4 by 6 foot granite boulder, 1 foot high; copper bolt stamped "9346 Sher"----- | 9, 357. 758 |
| T. 53 N., R. 88 W., summit of Bighorn Mountains, 10 feet southwest of road, in granite boulder 6 by 6 feet, 2 feet above ground; copper bolt stamped "9601 Sher"----- | 9, 612. 428 |

| | Feet. |
|---|-------------|
| T. 53 N., R. 88 W., sec. 10, 3 miles southwest of summit of Bighorn Mountains, 40 feet north of forks of Willett Creek, 100 feet east of road, in 12 by 4 foot granite bowlder of irregular shape; copper bolt stamped "9213 Sher"----- | 9, 224. 905 |
| T. 53 N., R. 88 W., sec. 33, 1.5 miles south of road crossing Shell Creek, 30 feet due west of road, at north end of first flat or park above, in granite bowlder; copper bolt stamped "8855 Sher"----- | 8, 885. 222 |

FORT MCKINNEY QUADRANGLE.

[Latitude 44°-44° 30'; longitude 106° 30'-107°.]

From Kearney (Foster ranch) south along road to Buffalo.

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| Kearney (Foster ranch house), 3.6 miles south of, sec. 12, T. 52 N., R. 83 W., 200 feet north of Middle Fork of Shell Creek, 50 feet west of road, at gate post in front of house; iron post stamped "4644 Sher"----- | 4, 653. 723 |
| T. 52 N., R. 82 W., sec. 19, 1 mile northwest of John Barkey's ranch, 1.5 miles west of Lake De Smet, 30 feet east of road at board gate; iron post stamped "4777 Sher"----- | 4, 786. 729 |
| T. 52 N., R. 82 W., sec. 32, 7 miles north of Buffalo, on summit between Lake De Smet and Rock Creek, 200 feet east of road, on knoll; iron post stamped "4940 Sher"----- | 4, 949. 718 |
| T. 51 N., R. 82 W., sec. 9, 1.8 miles north of Buffalo, 0.2 mile from Charles Round's ranch, at northeast corner of wire fence, in south angle of forks of road up Rock Creek; iron post stamped "4688 Sher"----- | 4, 697. 811 |
| T. 51 N., R. 82 W., sec. 22, 2 miles north of Buffalo, on divide between Buffalo and Rock creeks, 25 feet west of road; iron post stamped "4797 Sher"----- | 4, 806. 861 |

From Buffalo south and west along road to point 3 miles southwest of Smith's ranch house.

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|---|-------------|
| Buffalo, sec. 35, T. 51 N., R. 82 W., in yard of courthouse of Johnson County, 40 feet east of courthouse; iron post stamped "4635 Sher"----- | 4, 645. 003 |
| T. 50 N., R. 82 W., sec. 11, 2 miles south of Buffalo, on divide between Clear Creek and Nigger Creek, 30 feet north of irrigation ditch of Wyoming Land & Cattle Co.; iron post stamped "4836 Sher"----- | 4, 846. 187 |
| T. 50 N., R. 82 W., sec. 23, 300 feet due west of "Cross H" ranch house, inside of fence, 100 feet east of road; iron post stamped "4893 Sher"----- | 4, 903. 135 |
| T. 49 N., R. 82 W., sec. 10, divide between Crazy Woman and Clear Creek drainage, 50 feet west of road in saddle divide; iron post stamped "5298 Sher"----- | 5, 307. 727 |
| T. 49 N., R. 82 W., sec. 33, 500 feet west of Burnett's ranch house, 100 feet northeast of Crazy Woman, on Crazy Woman Creek, in granite bowlder beside fence post where road enters lane; copper bolt stamped "5019 Sher"----- | 5, 028. 540 |
| T. 49 N., R. 82 W., sec. 31, 100 yards south of George Washbaugh's ranch house, 200 feet south of Muddy Creek, in morainal bowlder, 30 feet north of road; copper bolt stamped "5142 Sher"----- | 5, 152. 201 |

Feet.

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| T. 48 N., R. 83 W., sec. 3, 3.5 miles southwest of Washbaugh's ranch, 17.5 miles southwest of Buffalo, foot of grade 300 feet east of mouth of canyon where road enters and ascends to top of mountain, Muddy Creek 1.5 miles north, in limestone boulder; copper bolt stamped "5975 Sher"----- | 5, 985. 066 |
| T. 48 N., R. 83 W., sec. 6, 6 miles northeast of Smith's ranch, 0.5 mile south of Muddy Creek, in saddle of divide between Muddy Creek and Billy Creek, on edge of mountains going down grade to valley, in limestone rock 15 feet south of stage road; bronze tablet stamped "7866 Sher"----- | 7, 876. 368 |
| T. 48 N., R. 84 W., sec. 15, 3.2 miles northeast of Smith's ranch, on divide between Muddy Creek and North Fork of Crazy Woman Creek, 150 feet south of road in patch of timber, in granite boulder; copper bolt stamped "8125 Sher"----- | 8, 185. 278 |
| Hazelton (Smith's ranch), 0.25 mile west of, sec. 28, T. 48 N., R. 84 W., in granite boulder 150 feet south of road on side of hill; copper bolt stamped "8111 Sher"----- | 8, 121. 648 |
| T. 47 N., R. 84 W., sec. 6, 1.5 miles southwest of Smith's ranch house, on divide between South Fork and Middle Fork of Crazy Woman Creek, in granite ledge 25 feet north of road; copper bolt stamped "8180 Sher"----- | 8, 190. 699 |
| From Burnett ranch south to Hesse ranch, thence east to point near Trabing, thence northwest to point of beginning? | |
| T. 48 N., R. 82 W., sec. 3, 0.5 mile west of dwelling house, east side of lane on Buffalo and Casper stage roads; iron post stamped "4963 Sher"----- | 4, 972. 258 |
| T. 48 N., R. 82 W., sec. 21, 1 mile south of Billy Creek, on divide between Billy and Poison Creeks, at forks of road, on edge of hill descending to basin of Poison Creek; iron post stamped "4943 Sher"----- | 4, 952. 697 |
| Hesse ranch, 2 miles northwest of, sec. 4, T. 47 N., R. 82 W., 60 feet east of road, top of divide between Poison and Middle Fork of Crazy Woman Creeks; iron post stamped "4952 Sher"----- | 4, 961. 894 |
| Hesse ranch, 50 feet west of, sec. 15, T. 47 N., R. 82 W., 150 feet north of Middle Fork of Crazy Woman Creek; iron post stamped "4776 Sher"----- | 4, 785. 686 |
| T. 47 N., R. 81 W., sec. 7, 3 miles west of Long's ranch, on divide between Middle Fork and South Fork of Crazy Woman Creek, 20 feet south of road, 200 yards north of ditch; iron post stamped "4669 Sher"----- | 4, 678. 087 |
| Long's ranch, in NW. $\frac{1}{4}$ sec. 10, T. 47 N., R. 81 W., northwest corner of yard around dwelling house, 150 feet north of Crazy Woman Creek; iron post stamped "4511 Sher"----- | 4, 520.541 |
| Trabing post office, 0.2 mile west of, sec. 26, T. 48 N., R. 81 W., 30 feet north of forks of road; iron post stamped "4476 Sher"----- | 4, 485. 722 |
| T. 48 N., R. 81 W., sec. 15, 3.2 miles northwest of Trabing, on divide between Buffalo and Douglas stage road; bronze tablet stamped "4605 Sher"----- | 4, 614. 509 |
| T. 49 N., R. 81 W., sec. 33, 7.5 miles northwest of Trabing, on divide between Buffalo Wallows and Crazy Woman Creek, 25 feet west of road, in large sandstone boulder; aluminum tablet stamped "4825 Sher"----- | 4, 834. 624 |

From stage road west up Poison Creek.

Feet.

T. 48 N., R. 84 W., sec. 17, 150 feet north of Poison Creek, 1.5 miles west of Hyattville-Buffalo stage road, in open park, 50 feet north of Muddy Pass road, in granite ledge beside mound of rocks; bronze tablet stamped "8206 Sher"----- 8, 219. 172

From Hazelton southeast to Bull Camp, thence west to Powder River.

T. 47 N., R. 84 W., sec. 3, Mattox ranch, in field 15 feet east of road, in granite boulder; bronze tablet stamped "7885 Sher"----- 7, 896. 004

Bull Camp, sec. 23, T. 47 N., R. 84 W., 150 yards north of Bull Creek (fork of Crazy Woman Creek), in Bull Camp mining district, in granite ledge, beside mound of rocks; bronze tablet stamped "7696 Sher"----- 7, 706. 695

T. 47 N., R. 84 W., sec. 28, 3 miles southwest of Bull Camp, on road to Powder River, on divide between Powder River and Crazy Woman Creek, 25 feet north of road, in granite boulder; bronze tablet stamped "7979 Sher"----- 7, 990. 051

T. 47 N., R. 84 W., sec. 30, 6 miles west of Bull Camp, on road from Bull Camp to Powder River, 20 feet north of point where road first passes near timber, 0.2 mile west of Two Creek, in limestone ledge beside mound of rocks; bronze tablet stamped "8041 Sher" - 8, 051. 793

From crossroads 6 miles northeast of Hazelton along highway north to Clear Creek, thence east to Buffalo.

North Fork of Crazy Woman Creek, 200 feet north of, large granite boulder on hill, 200 feet west of road, between forks of creek; aluminum tablet stamped "7714 Sher"----- 7, 724. 477

North Fork of Crazy Woman Creek, 2.2 miles north of, on west side of park at edge of timber, 6 feet west of road, in large granite boulder; aluminum tablet stamped "8253 Sher"----- 8, 263. 330

Sister Hill road and corduroy road to sawmill on Sour Dough Creek, 100 feet south of junction of, 0.1 mile south of cabin at fork of Sister Hill road and Fort McKinney road, 30 feet east of road on east side of park, in granite boulder beside mound of rock; aluminum tablet stamped "8076 Sher"----- 8, 086. 498

Sour Dough Creek, 0.2 mile north of road crossing, 60 feet east of road, on side of hill draining to creek, in granite boulder; aluminum tablet stamped "7831 Sher"----- 7, 841. 169

Middle Fork of Clear Creek, 700 feet north of road crossing and 50 feet west of road, in large boulder, beside mound of rocks; aluminum tablet stamped "7378 Sher"----- 7, 388. 263

North Fork of Clear Creek, 0.5 mile northeast of crossing of, in Fort McKinney wood reservation, 60 feet north of road, in granite ledge, beside mound of rock; aluminum tablet stamped "7042 Sher"----- 7, 052. 170

Needles, 600 feet west of, in Fort McKinney wood reservation, 6 feet north of road, near top of grade of old military road to Fort McKinney, in limestone ledge with mound of rocks alongside; aluminum tablet stamped "6476 Sher"----- 6, 486. 515

Fort McKinney, 2.5 miles west of, in Fort McKinney wood reservation, 10 feet north of road, 500 feet north of Clear Creek, in granite boulder, beside mound of rocks; aluminum tablet stamped "5322 Sher"----- 5, 332. 506

From point near Big Red southwest along Clear Creek road to Buffalo. (Part of line.)

Feet.

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| T. 52 N., R. 81 W., sec. 14, 1.2 miles southwest of Watt's ranch, 10 feet east of road, in large bowlder at base of telegraph pole; bronze tablet stamped "4237 Sher"----- | 4, 245. 878 |
| T. 52 N., R. 81 W., sec. 26, 300 feet west of schoolhouse No. 5, 0.2 mile west of Murray's ranch, 20 feet southeast of road, rock at base of fence corner post; bronze tablet stamped "4279 Sher"----- | 4, 287. 368 |
| T. 51 N., R. 81 W., sec. 9, at south gatepost at entrance to Conrad's ranch, 10 feet north of gate, 100 feet east of Buffalo stage road; iron post stamped "4395 Sher"----- | 4, 408. 479 |
| T. 51 N., R. 81 W., sec. 19, 6 miles north of Buffalo, old ranch at forks of road, at corner of fence, 50 feet east of stage road, 300 feet west of Clear Creek; iron post stamped "4448 Sher"----- | 4, 456. 751 |
| T. 51 N., R. 82 W., sec. 24, 300 feet northeast of Rock Creek, 30 feet south of stage road, on small hill; iron post stamped "4545 Sher"----- | 4, 553. 678 |

NO WOOD QUADRANGLE.

[Latitude 43° 30'-44°; longitude 107°-107° 30'.]

From point 6 miles southeast of Tensleep along stage road to point 8.5 miles southwest of Smith's ranch.

| | |
|---|-------------|
| Tensleep, 10 miles southeast of, in first basin near where road follows south side of south fork of Canyon Creek, 10 feet south of road; iron post stamped "5749 Sher"----- | 5, 759. 342 |
| Tensleep, 13.6 miles southeast of, in top of first bench at forks of Buffalo and Red Bank roads, in granite bowlder; bronze tablet stamped "7290 Sher"----- | 7, 300. 579 |
| Monument Springs, in limestone rock 15 feet south of stage road; bronze tablet stamped "7883 Sher"----- | 7, 893. 243 |

From stage road south via Uncle Billy Flat to divide between Mail Cabin Creek and Beartrap Creek.

| | |
|--|-------------|
| Uncle Billy Flat, on southeast end of, 300 feet east of road, on divide between Billy Creek and tributary of Powder River, in limestone bowlder; copper bolt stamped "8049 Sher"----- | 8, 059. 539 |
| Beartrap Creek and Mail Cabin Creek, on top of divide, 0.5 mile south of Mail Cabin Creek, 1 mile north of Beartrap Creek, 5 feet west of road, in limestone bowlder beside mound of rocks; copper bolt stamped "7876 Sher"----- | 7, 886. 800 |

RAIRDEN QUADRANGLE.

[Latitude 44°-44° 30'; longitude 107° 30'-108°.]

From mouth of Nowood River east along road through Bonanza to Hyattville.

| | |
|--|-------------|
| Mouth of Nowood River, 0.5 mile east of, 0.2 mile east of Sykes Bros. ranch, 0.2 mile east of Bonnie Rodgers coal mine, 75 feet west of road, on brow of hill, at telephone pole; iron post stamped "3929 RL"----- | 3, 937. 648 |
| Jordan's mill, 200 feet north of, 70 feet west of Jordan's house, 5 feet from gate inside of yard fence; iron post stamped "4000 RL"----- | 4, 008. 249 |
| Jordan's mill, 2.5 miles southeast of, 200 feet north of southwest corner of sec. 36, T. 50 N., R. 92 W., on sandstone knoll; aluminum tablet stamped "4025 RL"----- | 4, 033. 505 |

| | Feet. |
|---|-------------|
| Severson's ranch, 0.5 mile southeast of, 200 feet west of bridge on draw, 20 feet south of road; iron post stamped "4029 RL"----- | 4, 087. 100 |
| Bonanza, 1.5 miles northwest of, 300 feet northeast of angle in telephone line, 50 feet south of road; iron post stamped "4153 RL"---- | 4, 161. 876 |
| Bonanza, "Pop Conant's" old store building, northwest corner of foundation, in rock; aluminum tablet stamped "4111 RL"----- | 4, 119. 423 |
| Bonanza, 3 miles northeast of, 10 feet north of forks of road, road by telephone pole; iron post stamped "4265 RL"----- | 4, 272. 966 |
| Hyattville, 3.5 miles west of, 1.5 miles southwest of Mercer's ranch, on point of ridge, in sandstone ledge; aluminum tablet stamped "4361 RL"----- | 4, 369. 410 |
| Hyattville, 2.5 miles northwest of, 200 feet north of Mercer's ranch, 300 feet south of road, 2 feet south of yard fence, in limestone rock; aluminum tablet stamped "4395 RL"----- | 4, 406. 583 |
| Hyattville, northeast corner of Medicine Lodge and Main Street; iron post stamped "4447 Sher"----- | 4, 457. 370 |

From point 2.5 miles east of Basin east along upper road to Hyattville.

| | |
|--|-------------|
| Basin, 5.5 miles southeast of, 40 feet north of road, on point of hill, before top of bench, opposite triangulation station; iron post stamped "4041 RDLG"----- | 4, 049. 946 |
| Basin, 8.2 miles southeast of, 30 feet south of road at forks to Jordan's mill, 200 feet east of divide; iron post stamped "4191 RDLG"----- | 4, 109. 004 |
| Basin, 11.6 miles southeast of, 35 feet north of forks of road; iron post stamped "4106 RDLG"----- | 4, 113. 965 |
| Basin, 15 miles southeast of, 35 feet north of road, 150 feet west of gulch, 200 feet west of hill, opposite ranch house; iron post stamped "4007 RDLG"----- | 4, 015. 844 |
| Basin, 17.5 miles southeast of, 500 feet west of top of hill, 40 feet north of road, in sandstone ledge; aluminum tablet stamped "4120 RDLG" (marked by rock mound)----- | 4, 128. 633 |
| Bonanza-Hyattville road, 3 miles northwest of, 25 feet south of road, 1.5 miles southeast of creek; iron post stamped "4306 RDLG"----- | 4, 314. 010 |

From Bonanza southwest along road to Welling, thence north to mouth of Newwood River.

| | |
|--|-------------|
| Bonanza, 6 miles southwest of, 560 feet west of west bank of Sand Creek, 10 feet south of road, in large rock; aluminum tablet stamped "4146 RDLG"----- | 4, 154. 333 |
| Bonanza, 8.3 miles southwest of, 30 feet south of road on east summit of upper bench, 0.8 mile east of point where road descends to Bighorn Valley; iron post stamped "4513 RDLG"----- | 4, 521. 291 |
| Bonanza, 12.2 miles southwest of, 2 miles west of foot of bench, 30 feet south of road, 3,500 feet east of forks of road; iron post stamped "3996 RDLG"----- | 4, 003. 744 |
| Welling Ferry, 5.4 miles south of, 0.8 mile east of Bighorn River, 35 feet west of road; iron post stamped "3968 RDLG"----- | 3, 976. 561 |
| Welling Ferry, 2 miles south of, 250 feet east of southeast corner of A. W. Webb's fence, 25 feet west of road; iron post stamped "3939 RDLG"----- | 3, 947. 297 |
| Welling, 50 feet west of post office, at fence corner, 35 feet east of main road, 30 feet south of Bonanza road; iron post stamped "3918 RDLG"----- | 3, 926. 181 |

| | Feet. |
|--|-------------|
| Welling, 2 miles north of, 800 feet northwest of George Colbert's house, 5 feet east of road, at fence corner; iron post stamped "3931 RL"----- | 3, 939. 818 |
| Welling, 4.3 miles north of, 500 feet east of telephone line, 30 feet south of road, 1,500 feet west of Bighorn River, 2,500 feet south of old Alamo post office, in sandstone ledge; aluminum tablet stamped "3915 RDLG"----- | 3, 923. 874 |
| Welling, 7.4 miles north of, 1,000 feet southwest of Bonnie Rogers's house, 100 feet west of road, 40 feet west of ditch, in sandstone rock; aluminum tablet stamped "3872 RL"----- | 3, 881. 051 |

From Welling south along stage road to point near Worland.

| | |
|--|-------------|
| Welling, 1.3 miles southwest of, south bluff of Gooseberry Creek, 1,200 feet south of creek, 25 feet west of road; iron post stamped "4014 RDLG"----- | 4, 022. 871 |
| Welling, 6.3 miles southwest of, 3 feet east of telephone pole 1217, 20 feet west of road, 150 feet north of point where road crosses telephone line; iron post stamped "4053 RDLG"----- | 4, 061. 949 |
| Telephone pole 1104, opposite, 25 feet east of road, on south bluff of creek, 600 feet south of bed of creek; iron post stamped "4050 RDLG"----- | 4, 058. 582 |
| Worland, 2.5 miles north of, 300 feet north of small gulch, 20 feet west of road on point of ridge; iron post stamped "4114 RL"----- | 4, 122. 231 |
| Worland, northeast corner of A. C. Ruff's lot, 3 feet from fence corner, outside corner fence post, Main Street and alley, 10 feet west of Main Street; iron post stamped "4052 RDLG"----- | 4, 060. 830 |

From Trapper Corner south to Hyattville.

| | |
|--|-------------|
| Trapper Corner, 2.2 miles southwest of, at forks of road leading to spring, 300 feet north of corral, 250 yards southeast of spring; iron post stamped "7594 Sher"----- | 7, 603. 991 |
| Trapper Corner, 4 miles southwest of, on top of "Rim Rock," surrounded by mound of rock; iron post stamped "8546 Sher"----- | 6, 556. 222 |
| Hyattville, 7.5 miles north of, 4 miles north of Medicine Lodge, at forks of road to Alkali via Medicine Lodge Creek; iron post stamped "5590 Sher"----- | 5, 600. 593 |
| Hyattville, 5.5 miles north of, in yard 200 feet northwest of Wickwire ranch building, 400 feet north of Medicine Lodge Creek, on east slope of hill near pole fence; iron post stamped "4800 Sher"----- | 4, 810. 355 |
| Hyattville, 2.2 miles north of, 140 feet due south of Allen ranch house, 20 feet north of road; iron post stamped "4607 Sher"----- | 4, 617. 735 |
| Hyattville, northeast corner of Medicine Lodge and Main Street; iron post stamped "4447 Sher"----- | 4, 457. 370 |

From Hyattville southeasterly to Tensleep.

| | |
|--|-------------|
| Hyattville, 3.2 miles southeast of, at west point of gypsum ridge, 50 feet east of stage road; iron post stamped "4667 Sher"----- | 4, 677. 441 |
| Hyattville, 6.8 miles southeast of, 50 feet southwest of stage road, 100 feet northwest of Buffalo or Alkali Creek, 150 feet south of J. J. Smith's farm fence; iron post stamped "4492 Sher"----- | 4, 502. 387 |

| | Feet. |
|--|-------------|
| Hyattville, 7 miles southeast of, 40 feet southeast of road, 3 miles southeast of Buffalo Creek, in Bad Lands; iron post stamped "4406 Sher" ----- | 4, 416. 481 |

From point 2.8 miles southeast of Shell southeast to point 6 miles south of Trapper sawmill.

| | |
|--|-------------|
| Shell, 8 miles southeast of, on low divide between Trapper Creek and Red Canyon, 3.5 miles northwest of Red Canyon Spring, 60 feet north of road; iron post stamped "5816" ----- | 5, 826. 977 |
| Shell, 12 miles southeast of, 20 feet north of road, 150 feet north of Red Spring; iron post stamped "6604" ----- | 6, 615. 114 |

SHERIDAN QUADRANGLE.

[Latitude 44° 30'-45°; longitude 106° 30'-107°.]

From point near Higsbee southeast to Sheridan.

| | |
|---|-------------|
| T. 56 N., R. 34 W., sec. 10, 5 feet to left of road, alongside Chicago, Burlington & Quincy R. R. right of way fence, halfway between Sheridan and Higsbee; iron post stamped "3682 Sher" ----- | 3, 691. 685 |
|---|-------------|

From Sheridan south along Bighorn and Banner road to point near Foster ranch.

| | |
|--|-------------|
| Sheridan, in front of city hall; bronze tablet stamped "3738 Sher" -- | 3, 747. 286 |
| Sheridan, 1,000 feet south of railroad station, in meridian stone; bronze tablet stamped "3725 Sher" (reported by Coast and Geodetic Survey that part of this bench mark above ground has been destroyed). | |

| | |
|---|-------------|
| Sheridan, northeast corner of Crook and Fourth streets, 375 feet southeast of Burlington Route passenger station, in top of 20 by 24 inch capstone on top of 16 by 20 inch brick astronomical pier projecting 30 inches above ground; bronze tablet ----- | 3, 783. 907 |
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|---|-------------|
| T. 55 N., R. 84 W., sec. 10, east side of road; iron post stamped "3848 Sher" ----- | 3, 857. 806 |
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|---|-------------|
| Colorado Colony ranch, at south corner of entrance to lane; iron post stamped "3968 Sher" ----- | 3, 977. 638 |
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|---|-------------|
| Bighorn, in foundation cap of college building; bronze tablet stamped "4108 Sher" ----- | 4, 117. 782 |
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|---|-------------|
| T. 54 N., R. 84 W., sec. 1, McCormick Creek at road junction, south of Bighorn road, 50 feet west of Sheridan-Buffalo road, 700 feet north of ranch house; iron post stamped "4086 Sher" (the old location of this post was 100 feet south and 0.159 foot higher) ----- | 4, 095. 696 |
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| | |
|---|-------------|
| T. 54 N., R. 83 W., sec. 20, 0.5 mile north of Payne ranch, in field near corner post at junction with upper road to Bighorn; iron post stamped "4388 Sher" ----- | 4, 397. 754 |
|---|-------------|

| | |
|---|-------------|
| T. 53 N., R. 83 W., sec. 4, 0.6 mile south of Banner, 0.25 mile south of Joe Harper's ranch, at junction of Upper Piney Tunnel road with Sheridan-Buffalo road; iron post stamped "4605 Sher" ----- | 4, 614. 667 |
|---|-------------|

| | |
|---|-------------|
| Banner, 1.8 miles south of, at gatepost of James Kirkpatrick's ranch, under wire fence, 200 feet east of barn, 200 feet southeast of house; iron post stamped "4503 Sher" ----- | 4, 512. 780 |
|---|-------------|

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|--|-------------|
| T. 53 N., R. 83 W., sec. 15, Massacre Hill, divide between Piney and Prairie Dog creeks; iron post stamped "4960 Sher" ----- | 4, 969. 638 |
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|---|-------------|
| T. 53 N., R. 83 W., sec. 26, Foster's ranch on Piney Creek, 25 feet east of house and near wire fence; iron post stamped "4662 Sher" ---- | 4, 671. 627 |
|---|-------------|

| From Kearney post office east along highway to vicinity of Big Red post office. | | Feet. |
|--|--|-------------|
| T. 53 N., R. 82 W., sec. 31, 750 feet southwest of Sturgis ranch, 500 feet west of lane entering ranch, on side of hill, 0.2 mile south of Piney Creek, 5 feet south of road, in large boulder; bronze tablet stamped "4521 Sher"----- | | 4, 530. 473 |
| T. 53 N., R. 82 W., sec. 28, 0.2 mile due south of Flying E ranch, 25 feet south of road, in large boulder; bronze tablet stamped "4423 Sher"----- | | 4, 432. 612 |
| T. 53 N., R. 82 W., sec. 11, 750 feet northeast of M. A. Hamilton's ranch, 100 feet north of Piney Creek, at junction of Murphy Gulch and Piney Creek roads, in boulder; bronze tablet stamped "4308 Sher"----- | | 4, 818. 026 |
| T. 53 N., R. 81 W., sec. 8, southwest of Sam Dickey ranch, corner of stone tool house; bronze tablet stamped "4212 Sher"----- | | 4, 221. 359 |
| T. 53 N., R. 80 W., sec. 18, 0.5 mile southwest of Big Red, on point of divide between Piney and Clear creeks, at junction of Buffalo and Piney roads; bronze tablet stamped "4142 Sher"----- | | 4, 151. 002 |
| Copps ranch, southwest corner of, 60 feet southwest of Hopkins stage station, 20 feet south of gate, in rock in ground; bronze tablet stamped "4160 Sher"----- | | 4, 163. 839 |

From Sheridan along post road east and north 9.6 miles.

| | |
|---|-------------|
| T. 56 N., R. 84 W., sec. 25, 1.4 miles east of Sheridan, southeast corner of T road south, in 12-inch circular stone at foot of corner post in fence line; chiseled cross marked "3928.4"----- | 3, 925. 60 |
| T. 56 N., R. 53 W., sec. 30, 2.2 miles east of Sheridan, in head of bolt passing horizontally through brace and western pile south of road for overhead bridge on Burlington Route, about 1 foot above ground; chiseled cross marked "3807.4"----- | 3, 804. 56 |
| T. 56 N., R. 83 W., sec. 30, 2.9 miles east of Sheridan, where road turns north, on south side of road just inside fence line, 0.5 mile east of Prairie Dog Creek, 0.6 mile east of Burlington Route overhead bridge, projecting about 20 inches above ground; iron post stamped "3837"----- | 3, 833. 773 |
| T. 56 N., R. 83 W., sec. 20, 4 miles east and north of Sheridan, about 300 feet north of T roads, in north face of fence post on west side of road, 2 feet above ground; wire staple marked "3824.3"----- | 3, 821. 50 |
| T. 56 N., R. 83 W., sec. 8, 5.5 miles north and east of Sheridan, on east side of road, directly opposite entrance of private lane to J. R. Wirgand's ranch, 0.3 mile north of schoolhouse, 0.2 mile south of Prairie Dog Creek; iron post projecting about 20 inches above ground, stamped "3713"----- | 3, 710. 263 |
| T. 57 N., R. 83 W., sec. 27, 9.6 miles north and east of Sheridan, just inside fence line east of road, 800 feet south of private road to LU ranch; iron post stamped "3616"----- | 3, 612. 712 |

From Payne's schoolhouse north and east along Banner-Sheridan road and Meade and Dutch Creek valleys to Arno.

This line was run twice between HS ranch and Arno.

| | |
|---|-------------|
| T. 54 N., R. 83 W., sec. 20, 0.5 mile north of Payne ranch, near fence, in southwest corner of school lot; iron post stamped "4388"----- | 4, 397. 754 |
| T. 54 N., R. 83 W., sec. 18, 0.8 mile north of Payne's schoolhouse, in front of Baker's ranch, 20 feet west of road, 40 feet south of Meade Creek crossing; top of large stone----- | 4, 338. 15 |

| | Feet. |
|--|-------------|
| T. 54 N., R. 83 W., sec. 8, 200 feet southwest of house on Brock's ranch, on Meade Creek, 0.7 mile north of road to Prairie Dog Creek; probably iron post stamped "4213"----- | 4, 210. 840 |
| T. 55 N., R. 83 W., sec. 33, at southwest corner of junction of Meade Creek and Prairie Dog Creek roads, northwest corner of Meade schoolhouse, 2 feet south of north face, 1 foot above ground; aluminum tablet stamped "4064"----- | 4, 061. 772 |
| T. 54 N., R. 83 W., sec. 2, 1 mile east of HS ranch, 20 feet north of bend in road toward Dutch Creek, near brown cinder stone; iron post stamped "4216"----- | 4, 213. 426 |
| T. 55 N., R. 82 W., sec. 29, 40 feet northwest of J. S. Nick's ranch house, on secondary road in Dutch Creek valley, near gate; iron post stamped "3899"----- | 3, 967. 213 |
| T. 55 N., R. 82 W., sec. 16, 1.5 miles north of Daws ranch, 10 feet east of road, 100 feet north of group of cottonwood trees, in gully 12 feet deep; probably iron post stamped "3899"----- | 3, 897. 320 |
| T. 56 N., R. 82 W., sec. 32, northeast corner of yard of Bethorn schoolhouse, 0.7 mile south of railroad, in Dutch Valley; probably iron post stamped "3799"----- | 3, 797. 867 |
| Arno, 215 feet east of milepost 738, opposite section house, 44.8 meters north of center of Burlington Route tracks, 1 meter south of right of way fence, 1 meter above grade (C. & G. S. b. m. G 4)----- | 3, 775. 429 |
| From Arno along highway in circuit to east 13 miles, thence northwest to brownstone schoolhouse on Lower Badger Creek, thence southwest to point 9.6 miles northeast of Sheridan. | |
| T. 56 N., R. 82 W., sec. 34, 700 feet north of Green's ranch house, at forks of Dutch Creek and SR Creek wagon roads; iron post stamped "3860"----- | 3, 856. 998 |
| T. 56 N., R. 81 W., sec. 19, 40 feet southwest of L. A. Weir's ranch house, 3.5 miles above mouth of SR Creek, on edge of creek bank, 12 feet above road; iron post stamped "4005"----- | 4, 001. 423 |
| T. 56 N., R. 81 W., sec. 28, at SR Springs, on SR Creek, 150 feet southwest of house on opposite bank of creek, 25 feet above water; iron post stamped "4197"----- | 4, 193. 862 |
| T. 56 N., R. 81 W., sec. 22, about 2.2 miles north of SR Springs, on north slope of divide between SR and Badger creeks, on south side of small ridge, in badly broken country; iron post stamped "4337." (Not located, very difficult to find)----- | 4, 333. 977 |
| T. 56 N., R. 81 W., sec. 2, on north side of South Fork of Badger Creek, 2 miles above junction with North Fork, in Wolfjen's upper pasture, in top of large brown boulder; aluminum tablet stamped "3971"----- | 3, 967. 616 |
| T. 57 N., R. 81 W., sec. 23, at mouth of North Fork of Badger Creek, 1 mile northwest of Wolfjen's ranch, 30 feet north of road, on west bank of coulee; iron post stamped "3814"----- | 3, 810. 458 |
| T. 57 N., R. 81 W., sec. 9, 3 miles west of Wolfjen's ranch house, on Badger Creek, at windmill on south side of road; iron post stamped "3759"----- | 3, 756. 046 |
| T. 57 N.; R. 82 W., sec. 1, Burns ranch on Badger Creek road, northwest corner of dooryard, 10 feet northwest of house; iron post stamped "3684"----- | 3, 681. 636 |

| | Feet. |
|--|-----------|
| T. 58 N., R. 82 W., sec. 34, in northeast corner of Leo Muller's house; aluminum tablet stamped "3631"----- | 3,627.820 |
| T. 58 N., R. 82 W., sec. 19, 0.5 mile south of Badger Creek, on Sheridan road, in northeast corner of stone schoolhouse; aluminum tablet stamped "3570"----- | 3,566.744 |
| T. 58 N., R. 83 W., sec. 23, 0.2 mile south of Tongue River, 15 feet south of road, 3 feet north of fence, 30 feet east of bridge over Prairie Dog Creek; iron post stamped "3467"----- | 3,463.546 |
| T. 57 N., R. 83 W., sec. 3, opposite Nash & Walling's ranch house, the first south of mouth of Prairie Dog Creek, on north side of road, near gate to ranch; iron post stamped "3521"----- | 3,517.472 |
| T. 57 N., R. 83 W., sec. 15, 11.6 miles northeast of Sheridan, 0.9 mile north of schoolhouse, just inside of fence, east of road, in front of A ranch, 5 miles south of Tongue River on Prairie Dog Creek; iron post stamped "3573"----- | 3,570.447 |

Cheney, Cody, Embar, Franc Peak, Frannie, Fremont Peak, Grand Teton, Gros Ventre, Kinnear, Kerwin, Lenore, Lovell, Mount Leidy, Otto, Riverton, Sunshine, Thermopolis, Victor, and Younts Peak 30' quadrangles, and Meeteetse and Oregon Basin 15' quadrangles.

BIG HORN, FREMONT, AND LINCOLN COUNTIES.

The elevations in the following list were determined by primary leveling forming part of an adjusted net across the State in agreement with the 1912 adjustment of precise leveling. Orthometric corrections have been applied.

The leveling was done as follows: In Cody quadrangle in 1896 by E. W. Glafcke and in 1909 by Orr Meredith; in Franc Peak quadrangle in 1904 by H. M. Huntington and in 1909 by Meredith; in Frannie quadrangle in 1896 by Glafcke, in 1905 by F. A. Nussle, and by Reclamation Service; in Kirwin, Otto, and Thermopolis quadrangles in 1904 by Huntington and in 1905 by Nussle; in Embar quadrangle in 1904 by Huntington; in Sunshine quadrangle in 1904 by Huntington, in 1910 by C. W. Rowell, and in 1911 by C. C. Gardner; in Kinnear, Lenore, Lovell, and Riverton quadrangles in 1905 by Nussle; in Fremont Peak and Gros Ventre quadrangles in 1905 by Nussle and in 1906 by Huntington; in Cheney quadrangle in 1899 by Goynes Drummond; in Grand Teton and Mount Leidy quadrangles in 1897 by C. W. Beach and in 1899 by Drummond; in Younts Peak quadrangle in 1897 by Beach, in 1904 by Huntington, and in 1905 by Nussle; and in Victor quadrangle in 1899 by Drummond.

CHENEY QUADRANGLE.

[Latitude 43°-48° 30'; longitude 110° 30'-111°.]

From Emery's ranch west along trail to Wyoming-Idaho State line.

| | Feet. |
|--|-----------|
| Clubhouse, 50 feet southeast of; iron post stamped "6241 B. & M."---- | 6,243.682 |
| Wilson's store, 2 feet west by 3 feet south of northwest corner; bronze tablet stamped "6143 B. & M."----- | 6,145.723 |

| | Feet. |
|---|-------------|
| Snake River, at Wilson's store; surface of water..... | 6, 153 |
| Lockwood's ranch, 20 feet west of ranch house; bronze tablet stamped "6381 B. & M."..... | 6, 383. 410 |
| Teton Pass, 30 feet north of road; iron post stamped "8429 B. & M.".. | 8, 431. 266 |
| Curtis ranch, 2 feet west of ranch house; bronze tablet stamped "7242 B. & M."..... | 7, 244. 621 |

CODY QUADRANGLE.

[Latitude 44° 30'–45°; longitude 109°–109° 30'.]

From point near Cody to point 2 miles east of.

| | |
|--|-------------|
| Cody, 200 feet south of flagpole, in volcanic rock at foot of second bench; copper bolt stamped "5010"..... | 5, 018. 440 |
| Cody, 2 miles east of, 0.8 mile north of Johnson's house, at southwest corner of fence at forks of Burlington and Meeteetse road; iron post stamped "5071 RL"..... | 5, 078. 983 |

From point near Eagle north along road to Chance.

| | |
|--|-------------|
| Eagles Nest, 8.5 miles north of, 50 feet east of county road; iron post stamped "4786"..... | 4, 794. 098 |
| Bell's ranch, 15 miles south of, on divide between Clark's Fork and Shoshone River, 150 feet west of road, near edge of rim; iron post stamped "4805"..... | 4, 812. 859 |
| Bell's ranch, 13 miles south of, 25 feet east of road, south bank of Sand Coulee Creek; iron post stamped "4340"..... | 4, 847. 920 |
| Bell's ranch, 10 miles south of, 200 feet east of county road; iron post stamped "4283"..... | 4, 291. 056 |
| Bell's ranch, 7.5 miles south of, 300 feet east of road, in brown sand- stone rock; bronze tablet stamped "4183"..... | 4, 190. 715 |
| Bell's ranch, 4 miles south of, 40 feet east of road; iron post stamped "4094"..... | 4, 101. 620 |
| Bell's ranch, 3 miles east of, 1 mile east of Sand Coulee; iron post stamped "4187"..... | 4, 144. 995 |
| Bell's ranch, 5 miles east of, in sandstone ledge; copper bolt stamped "4334"..... | 4, 342. 119 |

From point near Chance southwest up north side of Clark Fork to Clark, thence
along south side of Clark Fork and Sunlight Creek to Elk Creek (single spur
line).

| | |
|--|-------------|
| Chance, 5.2 miles southwest of, 250 feet north of road, near head of boulder-lined gully, 1,250 feet east of headgate; paint mark on granite boulder, marked "4082"..... | 4, 080. 56 |
| Chance, 6.8 miles southwest of, 1,000 feet southwest of house, 700 feet northeast of Line Creek crossing, 50 feet southeast of road, in gran- ite boulder; aluminum tablet stamped "4177"..... | 4, 175. 692 |
| Chance, 8 miles southwest of, 70 feet west of road, 100 feet south of road west, on tip of granite boulder; painted square marked "4181"..... | 4, 179. 50 |
| Chance, 10.2 miles southwest of, 15 feet northwest of road, 50 feet east of fourth pole from junction of telephone lines, on striped granite boulder; point marked "4303"..... | 4, 301. 199 |
| Clark, 1 mile north of, 50 feet north of road, on top of bank, 300 feet northwest of Linguist's store and ranch, in granite boulder; aluminum tablet stamped "4309"..... | 4, 307. 763 |

Feet.

| | |
|--|-------------|
| Mail Camp ranch, 0.5 mile west of, 200 feet west of gate, 50 feet south of road on summit; aluminum tablet stamped "RL"----- | 6, 495. 633 |
| Blondes ranch, 6.3 miles west of, 2 miles north of Mail Camp ranch, near foot of mountain, 15 feet east of road, in limestone rock; aluminum tablet stamped "6943 RL"----- | 6, 950. 626 |
| Blondes ranch, 4.8 miles west of, on Summit of Owl Creek Mountain, 0.1 mile west of point where road crosses divide, 100 feet west of trail, in granite rock; aluminum tablet stamped "8099 RL"----- | 8, 106. 769 |
| Blondes ranch, 2.1 miles west of, 2.7 miles north of summit of Owl Creek Mountain, in saddle on top of steep hill 40 feet north of road, in limestone rock; aluminum tablet stamped "7254 RL"----- | 7, 261. 374 |
| Blondes ranch, 0.8 mile west of, 200 feet southeast of crossing of South Fork of Owl Creek, in lava rock 10 feet south of road, marked by rock mound; aluminum tablet stamped "6482 RL"----- | 6, 489. 754 |
| Blondes ranch, 2 miles north of, 0.5 mile north of Owl Creek, at forks of Thermopolis and Meeteetse roads, in lava rock; aluminum tablet stamped "6473 RL"----- | 6, 480. 426 |
| Basin Embar ranch, 1 mile north of, 700 feet south of county road, 300 feet north of North Fork of Owl Creek, 150 feet north of forks of roads, in flint rock in pasture, marked by rock mound; aluminum tablet stamped "6095 RL"----- | 6, 101. 955 |
| Short's house, 100 feet south of, 5 feet south of fence, 25 feet north of road, in lava rock; aluminum tablet stamped "5789 RL"----- | 5, 796. 401 |
| Embar ranch buildings, 300 feet south of, 100 feet south of South Fork of Owl Creek, at forks of road leading into ranch; iron post stamped "5611 RL"----- | 5, 618. 189 |
| Embar ranch, 3 miles east of, 200 feet north of road, in southeast corner of field; iron post stamped "5469 RL"----- | 5, 476. 454 |
| Embar ranch, 5.6 miles east of, 0.25 mile southeast of junction of South and North Forks of Owl Creek, 200 feet south of road, in sandstone ledge level with ground, 100 feet northeast of large sandstone rocks; aluminum tablet stamped "5342 RL"----- | 5, 839. 426 |
| Embar ranch, 9 miles east of, 1 mile southeast of Padlock ranch, 25 feet north of road, 50 feet east of mail box; iron post stamped "5118 RL"----- | 5, 115. 836 |
| From point near Gwin's ranch northwest to point about 10 miles northwest of Il. | |
| Il, 2 miles northwest of, 700 feet east of road, 600 feet east of draw, at foot of rocky ridge, in sandstone rock; aluminum tablet stamped "5300 RL"----- | 5, 806. 540 |
| Il, 5 miles northwest of, 1 mile northwest of divide between Grass and Gooseberry creeks, 250 feet west of road, in sandstone rock; aluminum tablet stamped "5434 RL"----- | 5, 440. 866 |
| Il, 8 miles northwest of, on divide between Gooseberry Creek and tributary, 100 feet south of road, in sandstone ridge (rock mound on top); aluminum tablet stamped "5580 RL"----- | 5, 587. 401 |

FRANC PEAK QUADRANGLE.

[Latitude 44°-44° 30'; longitude 109°-109° 30'.]

From point 5 miles north of stage station, Cody-Meeteetse road, to point 8 miles south of Cody.

| | |
|--|-------------|
| Wiley's house, 1 mile west of, 1 mile southeast of Sage Creek, on ridge, 6 feet west of road; iron post stamped "5592 RL"----- | 5, 599. 699 |
|--|-------------|

| | Feet. |
|--|-------------|
| Watkins ranch, 1 mile south of, in forks of Sage Creek and gulch, 6 feet west of road, opposite telephone pole 140-336; iron post stamped "5345 RL"----- | 5, 853. 017 |
| Cody, 5 miles southeast of, on divide between Coal Mine and Sage creeks, 5 feet south of road (road now changed to follow telephone line); iron post stamped "5222 RL"----- | 5, 229. 800 |
| From point near Cody west up North Fork of Shoshone River to Craig Creek (single spur line). | |
| Cody, 8.2 miles west of, 5 feet below lower edge of road, opposite U. S. R. S. office, at sharp turn to right; iron post----- | 5, 366. 852 |
| Cody, 9.2 miles west of, 30 feet south of road, on top of sandstone boulder; chiseled square, marked "5396"----- | 5, 394. 75 |
| Cody, 10 miles west of, 2 miles west of dam, 100 feet east of fill, on pyramidal stone on north margin of road; chiseled square, marked "5424"----- | 5, 422. 569 |
| Cody, 11 miles west of, 3 miles west of dam, 25 feet north of east end of bridge crossing small ravine, in loose stone boulder; aluminum tablet stamped "5437"----- | 5, 435. 313 |
| Cody, 12 miles west of, at east end of low bridge, 0.6 mile east of Rattlesnake Creek; on top of boulder, marked "5393"----- | 5, 391. 65 |
| Cody, 12.7 miles west of, at north margin of east abutment of Rattlesnake bridge; chiseled square, marked "5391"----- | 5, 389. 56 |
| Cody, 13.7 miles west of, north margin of road, west side of small bridge, on boulder; chiseled point, marked "5381"----- | 5, 379. 70 |
| Cody, 14.7 miles west of, 100 feet east of gateway to George Logan's residence, north of road, in sandstone boulder 25 feet north of Government road; aluminum tablet stamped "5404"----- | 5, 402. 582 |
| Cody, 17 miles west of, 200 feet east of Trout Creek bridge, in southwest abutment of culvert over Therman ditch; aluminum tablet stamped "5486"----- | 5, 484. 228 |
| Cody, 21 miles west of, 4 miles west of Trout Creek, 2,500 feet west of large house near river, 70 feet south of Government road, in top of dome-shaped boulder 4 feet high; aluminum tablet stamped "5582"----- | 5, 580. 400 |
| Cody, 22 miles west of, 550 feet west of tube bridge over Shoshone River, 150 feet south of telegraph line; point on small boulder, marked "5598"----- | 5, 596. 88 |
| Cody, 23 miles west of, opposite "3" ranch, 400 feet north of river, near trail; point on volcanic stone, marked "5636"----- | 5, 634. 19 |
| Cody, 24 miles west of, 0.3 mile north of river, 3 feet south of trail, 100 feet east of another trail at crossing of dike; point on stone, marked "5834"----- | 5, 832. 77 |
| Cody, 25.8 miles west of, 200 yards east of Craig Creek, 50 feet north of trail, 0.2 mile north of river, at foot of bluff at mouth of shallow ravine with wind-worn sandstone outcrop on its east side, in granite boulder; aluminum tablet stamped "5802"----- | 5, 800. 456 |
| From point 9.3 miles west of Cody southwest up South Fork of Shoshone River to point 9 miles southwest of Lahawoa (single spur line). | |
| Cody, 10.6 miles west of, 3,000 feet south of forks of Shoshone River, 175 feet northeast of ranch house, at corner of shed; paint point on granite boulder, marked "5225"----- | 5, 223. 83 |

| | Feet. |
|--|-------------|
| Cody, 12.4 miles west of, 1 mile south of schoolhouse, 50 feet south of road forks, on stone at east margin of road; square point marked "5304"----- | 5, 802. 59 |
| Cody, 14.7 miles west of, 6 miles south of dam, at east side of road, 130 feet north of gate to F. M. Williams's ranch; summit of section corner stone, marked "5417"----- | 5, 415. 96 |
| Cody, 15.5 miles west of, 4,000 feet southwest of bridge south of F. M. Williams's residence, 1,050 feet northeast of road crossing Cody ditch, in granite boulder 50 feet northwest of road; aluminum tablet stamped "5428"----- | 5, 423. 090 |
| Cody, 16.5 miles southwest of, 8 miles southwest of Government dam, 0.5 mile east of head of Cody ditch, opposite ravine, 50 feet north of road and east of watercourse, on summit of 2-foot by 3-foot boulder; point marked "5471"----- | 5, 469. 89 |
| Cody, 18 miles southwest of, 9.7 miles from dam, opposite large ranch house, on north side of road, 230 feet south of road at creek crossing; point on boulder, marked "5576"----- | 5, 574. 85 |
| Cody, 19 miles south of, 10.5 miles above dam, 200 feet south of trail; point on volcanic boulder, marked "5561"----- | 5, 559. 95 |
| Cody, 20 miles southwest of, 11.7 miles southwest of dam, opposite lower of two trestles in ditch on north side; point on boulder, marked "5637"----- | 5, 635. 06 |
| Cody, 21 miles southwest of, 12.5 miles southwest of dam, at west margin of road, at road forks and Bull Creek crossing, in granite boulder; aluminum tablet stamped "5681"----- | 5, 679. 226 |
| Cody, 22 miles southwest of, 13.6 miles southwest of dam, 1 mile southwest of Bull Creek, on southwest corner of wooden bridge, 100 feet northeast of ditch crossing; spike head marked "5756"----- | 5, 754. 85 |
| Ishawoos, 1 mile south of, 130 feet north of Bellknap Creek, in low granite boulder at north margin of road; aluminum tablet stamped "5926"----- | 5, 824. 085 |
| Ishawoos, 2 miles west of, 1.1 miles west of Bellknap Creek, 0.2 mile south of road, 300 feet south of section corner, at top of bluff; point on summit of boulder, marked "5940"----- | 5, 833. 46 |
| Ishawoos, 4 miles west of, 100 feet east of Rock Creek crossing, in granite boulder at north margin of road; aluminum tablet stamped "5908"----- | 5, 806. 282 |
| Ishawoos, 5 miles west of, 250 feet north of road, 100 feet north of old road; point on summit of boulder, marked "6054"----- | 6, 052. 88 |
| Ishawoos, 6 miles west of, 2 miles southwest of Rock Creek, 50 feet south of road, near upper end of ancient rock bar; point on granite boulder, marked "6226"----- | 6, 224. 296 |
| Ishawoos, 7 miles southwest of, 500 yards southwest of small stream crossing, 3 miles southwest of Rock Creek, 75 feet northwest of road, 150 feet north of divide; point on boulder, marked "6400"----- | 6, 398. 44 |
| Ishawoos, 9 miles southwest of, 5 miles southwest of Rock Creek, 330 feet north of dugout, 75 feet east of road, in large sandstone boulder; aluminum tablet stamped "6344"----- | 6, 342. 900 |

FRANNIE QUADRANGLE.

[Latitude 44° 30'–45°; longitude 108° 30'–109°.]

From Cody north along road through Corbett to Eagles Nest.

| | Feet. |
|--|-----------|
| Sage Creek, 150 yards west of, 250 feet south of road to Cody, at foot of second bench, 300 yards southeast of sheep pens, in large quartzite boulder; copper bolt stamped "4889"----- | 4,896.861 |
| Shoshone River, 500 yards south of bridge over, 100 feet south of road, in sandstone rock; copper bolt stamped "4759"----- | 4,766.776 |
| Corbett, 50 feet east of north end of bridge across Shoshone River, in sandstone rock; copper bolt stamped "4671"----- | 4,678.476 |
| Billings and Heart Mountain roads, junction of, 22.5 feet northwest of flagpole (azimuth station), on first or upper bench above Corbett; iron post stamped "4788"----- | 4,795.864 |
| Corbett, 2.5 miles north of bridge across Shoshone River, 150 feet east of county road; iron post stamped "4725"----- | 4,733.076 |
| Eagles Nest, 3.2 miles southwest of, 100 feet west of county road; iron post stamped "4687"----- | 4,694.742 |

From Eagles Nest north along road to Bell's ranch on Clarks Fork.

| | |
|---|-----------|
| Eagles Nest, 0.25 mile northeast of, junction of Billings-Red Lodge road; iron post stamped "4664"----- | 4,671.607 |
| Eagles Nest, 2.5 miles north of, at edge of second bench north of Shoshone River, 50 feet east of road; iron post stamped "4853"--- | 4,860.723 |

From Eagles Nest east 7 miles and north along Billings Road to Frannie.

| | |
|---|-----------|
| Eagles Nest, 3.5 miles east of, 100 feet north of road; iron post stamped "4552"----- | 4,560.152 |
| Eagles Nest, 6.5 miles east of, in flat on second bench above Shoshone River, 50 feet east of road; iron post stamped "4491"----- | 4,498.540 |
| Eagles Nest, 9.5 miles east of, 100 feet south of road; iron post stamped "4396"----- | 4,403.855 |
| Eagles Nest, 13.5 miles northeast of, 150 feet southeast of road, in sandstone rock; copper bolt stamped "4382"----- | 4,389.534 |
| Eagles Nest, 17 miles northeast of, 200 feet northwest of road on edge of divide, in large block of yellow sandstone; copper bolt stamped "4442"----- | 4,450.186 |
| Eagles Nest, 20 miles northeast of, 0.2 mile north of Alkali Creek, 300 feet east of road, in sandstone ledge; copper bolt stamped "4254"----- | 4,262.050 |
| Frannie, 7.5 miles south of, 75 feet east of road; iron post stamped "4248"----- | 4,255.552 |
| Frannie, 3 miles south of, north side of road; iron post stamped "4212"----- | 4,219.782 |
| Frannie, 1 mile south of, 100 feet west of road; iron post stamped "4191"----- | 4,199.211 |
| Frannie, northeast corner of J. Morris's yard near picket fence; iron post stamped "4212"----- | 4,219.474 |

From Frannie west on Montana-Wyoming State line.

| | |
|---|-----------|
| Frannie, 8 miles west of, on divide between Clarks Fork and Shoshone River; iron post stamped "4785"----- | 4,792.862 |
|---|-----------|

Feet.

| | |
|---|-------------|
| Frannie, 10 miles west of, rocky point east of mudholes in dry creek, in sandstone ridge; copper bolt stamped "4753"----- | 4, 769. 283 |
| Bell's ranch, 12 miles east of, top of mesa near large canyon heading northward; iron post stamped "4882"----- | 4, 889. 248 |
| Bell's ranch, 8 miles east of, 0.5 mile from top of ridge, on west slope of divide; copper bolt stamped "4545"----- | 4, 551. 751 |

From point 6 miles northwest of Germania along road northwest to Garland.

| | |
|--|-------------|
| Germania, 6.8 miles north of, 1,500 feet north of fork of road to Burlington, 40 feet west of road, 20 feet west of telephone pole 2335; iron post stamped "4539 RL"----- | 4, 547. 009 |
| Germania, 8.6 miles north of, 30 feet west of road, 20 feet west of telephone pole 2172, on point of ridge, 2 miles north of forks of roads; iron post stamped "4378 RL"----- | 4, 385. 783 |
| Germania, 10.8 miles north of, 350 feet east of telephone pole 2095, 3,200 feet north of Sage Creek, 40 feet west of road; iron post stamped "4323 RL" (set by Reclamation Service)----- | 4, 331. 330 |
| Germania, 12.8 miles north of, 1,000 feet east of telephone pole 2025, 35 feet west of road, on point of small ridge; iron post stamped "4317 RL" (set by Reclamation Service)----- | 4, 325. 548 |
| Whistle Creek, 0.8 mile north of, 40 feet east of telephone pole 1943, 40 feet west of road; iron post stamped "4250 RL" (set by Reclamation Service)----- | 4, 257. 908 |
| Garland, 3.5 miles southeast of, 200 feet north and 300 feet east of center of Shoshone River bridge; iron post stamped "4083 RL" (set by Reclamation Service)----- | 4, 090. 740 |

FREMONT PEAK QUADRANGLE.

[Latitude 43°-43° 30'; longitude 109° 30'-110°.]

Bench mark in T. 35 N., R. 110 W., about on west side of sec. 9.

| | |
|--|-------------|
| Alexander's house, 4 miles south of, 0.25 mile north of Big Gate, 400 feet north of fence corner, 50 feet east of fence, 40 feet east of road, in granite rock; aluminum tablet stamped "7463 RDLG"--- | 7, 472. 007 |
|--|-------------|

Bench mark in T. 37 N., R. 110 W., about in northeast corner of sec. 13.

| | |
|---|-------------|
| T. 37 N., R. 110 W., about northeast corner of sec. 13, 0.8 mile south of creek, in granite rock 1,000 feet east of fence; aluminum tablet stamped "7665 RDLG"----- | 7, 673. 406 |
|---|-------------|

From Big Bend 4 miles north of Wells southeast along road up Green River to Green River Lake (single spur line).

| | |
|---|-------------|
| T. 39 N., R. 109 W., sec. 6, at southwest corner of porch of Hill's ranch house, in flint rock 1 by 1 foot and 6 inches above ground; aluminum tablet stamped "7799 RL"----- | 7, 806. 000 |
| T. 39 N., R. 109 W., sec. 5, 1.3 miles east of Hill's ranch, 1,000 feet southeast of river, 25 feet northwest of road in grove of pine trees, in small granite rock; aluminum tablet stamped "7858 RL"----- | 7, 865. 506 |
| T. 39 N., R. 109 W., sec. 11, 5.1 miles southeast of Hill's ranch, 700 feet southwest of old cabin and barn, 500 feet south of river, 100 feet south of road, in granite rock; aluminum tablet stamped "7948 RL"----- | 7, 953. 098 |
| Outlet of Green River Lake; surface of water, November 6, 1906----- | 7, 953. 0 |

| | Feet. |
|--|-------------|
| Osborne's house, south side of, in granite rock; aluminum tablet stamped "7963 RL"----- | 7, 971. 454 |
| Osborne's house, 400 feet south of, on south side of channel at water edge, in granite rock; aluminum tablet stamped "7963 RL"----- | 7, 960. 784 |
| From Big Bend 4 miles north of Wells northeast along road over Continental Divide toward Wind River. | |
| T. 40 N., R. 110 W., sec. 36, 6.7 miles north of Wells, 6 feet east of road, on ridge, in granite rock; aluminum tablet stamped "8125 RDLG"----- | 8, 123. 964 |
| T. 40 N., R. 109 W., sec. 29, 9 miles northeast of Wells, 200 feet south of seventh creek crossing, 1,000 feet north of eighth crossing, on ridge, 25 feet east of road, in large rock; aluminum tablet stamped "9008 RDLG"----- | 9, 016. 297 |
| T. 40 N., R. 109 W., sec. 16, 6.1 miles south of Continental Divide, 200 feet south of Dry Branch, 5 feet west of road, in large granite rock; aluminum tablet stamped "9245 RDLG"----- | 9, 252. 862 |
| T. 40 N., R. 109 W., sec. 10, 4.4 miles south of Continental Divide, 1 mile south of creek, 5 feet east of road, on ridge, in large granite rock; aluminum tablet stamped "9016 RDLG"----- | 9, 024. 646 |
| T. 40 N., R. 109 W., sec. 2, 2.5 miles south of Continental Divide, 700 feet south of creek, 8 feet west of road, on ridge, in granite rock; aluminum tablet stamped "8994 RDLG"----- | 9, 002. 378 |
| T. 41 N., R. 109 W., sec. 25, 1,500 feet south of third creek crossing, on Continental Divide, 8 feet west of road, in large granite rock; aluminum tablet stamped "9201 RDLG"----- | 9, 209. 314 |
| T. 41 N., R. 109 W., sec. 25, 0.25 mile north of Continental Divide, 100 feet north of third creek crossing, 30 feet east of road, in large granite rock; aluminum tablet stamped "9178 RDLG"----- | 9, 185. 985 |

Bench mark near Pease ranch.

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|---|-------------|
| T. 41 N., R. 106 W., sec. 24, 4 miles west of Circle, 0.1 mile east of Henry Pease's ranch, in center of lane, 15 feet north of road, in large granite rock; aluminum tablet stamped "6662 RL"----- | 6, 669. 521 |
|---|-------------|

GRAND TETON QUADRANGLE.

[Latitude 43° 30'–44°; longitude 110° 30'–111°.]

From Buffalo ford southwest along road east of Snake River to May's ranch.

| | |
|--|-------------|
| T. 45 N., R. 114 W., north side of Buffalo ford, 20 feet from wagon road; iron post stamped "6731 B. & M."----- | 6, 733. 570 |
| T. 44 N., R. 114 W., in front of Fisher's cabin, 40 feet from road; iron post stamped "6739 B. & M."----- | 6, 741. 409 |
| T. 44 N., R. 114 W., at front gate of Cunningham's ranch, southeast of house; iron post stamped "6750 B. & M."----- | 6, 752. 458 |
| T. 44 N., R. 115 W., sec. 36, 3.5 miles southwest of Cunningham's ranch, 50 feet east of road, 600 feet northeast of quarter corner between secs. 35 and 36; iron post stamped "6973 B. & M."----- | 6, 975. 662 |
| T. 43 N., R. 115 W., sec. 11, 100 feet east of road, at Antelope Springs; iron post stamped "6792 B. & M."----- | 6, 794. 682 |
| T. 43 N., R. 115 W., sec. 8, 0.8 mile south of May's ranch, 75 feet east of road; iron post stamped "6597 B. & M."----- | 6, 599. 582 |

From Buffalo ford along road down west side of Snake River via Smith's ranch to Menor ferry, thence across Snake River south 8 miles and east to May's ranch.

| | Feet. |
|--|-------------|
| T. 45 N., R. 114 W., northwest corner of yard at Smith's ranch; iron post stamped "6748 B. & M."----- | 6, 750. 148 |
| SNAKE RIVER; surface of water----- | 6, 734 |
| JACKSON LAKE, at south end of; surface of water----- | 6, 736 |
| T. 45 N., R. 114 W., 3 miles southwest of Smith's ranch, 10 feet west of road; iron post stamped "6945 B. & M."----- | 6, 947. 248 |
| T. 44 N., R. 115 W., sec. 14, 6.8 miles southwest of Smith's ranch, 60 feet north of road fork; iron post stamped "6754 B. & M."----- | 6, 756. 342 |
| T. 44 N., R. 115 W., sec. 26, 11.1 miles southwest of Smith's ranch, north mark of base line; bronze tablet stamped "6832 B. & M."--- | 6, 831. 753 |
| T. 43 N., R. 116 W., 1 mile west of Menor ferry, 50 feet north of road, 70 feet west of signboard; iron post stamped "6497 B. & M."----- | 6, 499. 415 |
| MENOR FERRY; mark on Snake River water gage----- | 6, 451. 06 |
| MENOR FERRY, 30 feet southwest of Menor's house; iron post stamped "6458 B. & M."----- | 6, 460. 474 |
| MENOR FERRY, 3 miles south of, sec. 12, T. 42 N., R. 116 W., 60 feet east of road fork; iron post stamped "6459"----- | 6, 461. 880 |

From Menor ferry southwest along west side of Snake River to Wilson's store.

| | |
|---|-------------|
| STEWART'S house, 6 feet southwest of; iron post stamped "6439 B. & M."----- | 6, 432. 444 |
| T. 42 N., R. 116 W., near corner of secs. 17, 18, 19, and 20, 700 feet east of Miller's house, 40 feet east of corner of fence; iron post stamped "6337 B. & M."----- | 6, 339. 959 |
| MILLER'S house, 4 miles southwest of, line between Tps. 41 and 42 N., 400 feet southwest of house, 80 feet north of road fork; iron post stamped "6247 B. & M."----- | 6, 249. 692 |

From Capt. Smith's ranch along road north and west of Jackson Lake.

| | |
|---|-------------|
| T. 46 N., R. 114 W., sec. 31, 3.8 miles northwest of Smith's ranch, 325 feet north of Pilgrim Creek; iron post stamped "6914 B. & M."----- | 6, 916. 368 |
| T. 46 N., R. 115 W., 9 miles northwest of Smith's ranch, southeast corner of yard of Sargent's old ranch; iron post stamped "6390 B. & M."----- | 6, 892. 146 |
| JACKSON LAKE; surface of water----- | 6, 736. 0 |
| T. 46 N., R. 115 W., 11 miles northwest of Smith's ranch, 20 feet east of road, 300 feet west of house; iron post stamped "6758 B. & M."--- | 6, 760. 313 |
| T. 47 N., R. 115 W., 13.5 miles northwest of Smith's ranch, 25 feet west of road, 60 feet northwest of signboard; iron post stamped "6797 B. & M."----- | 6, 799. 959 |

From May's ranch south along highway via Glidden's ranch to Giltner's ranch.

| | |
|--|-------------|
| GLIDDEN'S ranch, 100 feet east of house; iron post stamped "6371 B. & M."----- | 6, 373. 714 |
| GILTNER'S ranch, northwest corner of Moses Giltner's yard; iron post stamped "6213 B. & M."----- | 6, 215. 870 |

From Glidden's ranch southeast along highway to Emery's ranch.

| | |
|---|-------------|
| GLIDDEN'S ranch, 3.2 miles southeast of, 200 feet north of ford on Flat Creek, 3 feet southeast of corner of Tps. 41 and 42 N., Rs. 115 and 116 W.; iron post stamped "6324 B. & M."----- | 6, 326. 224 |
|---|-------------|

| | Feet. |
|---|------------|
| Emery's ranch, in northwest corner of Emery's yard; iron post stamped "6449 B. & M."----- | 6, 451.961 |

GROS VENTRE QUADRANGLE.

[Latitude 43°-43° 30'; longitude 110°-110° 30'.]

From point northwest of Gros north along highway to point 3.9 miles northwest of Wells.

| | |
|--|------------|
| T. 36 N., R. 110 W., sec. 32, 2 miles south of Alexander's house, 200 feet east of fence, 50 feet east of road in hollow, in rock; aluminum tablet stamped "7539 RDLG"----- | 7, 547.593 |
| T. 36 N., R. 110 W., sec. 20, 0.5 mile south of forks, 300 feet north of gate to Alexander's pasture, 30 feet east of road, in granite rock; aluminum tablet stamped "7664 RDLG"----- | 7, 672.126 |
| T. 36 N., R. 110 W., sec. 8, 2 miles south of summit, 1,000 feet north of forks of road, 60 feet east of road, in granite rock on ridge; aluminum tablet stamped "7820 RDLG"----- | 7, 823.696 |
| T. 37 N., R. 110 W., sec. 11, 0.5 mile south of forks of road, on summit, 40 feet east of road, in granite rock; aluminum tablet stamped "7877 RDLG"----- | 7, 884.864 |
| T. 37 N., R. 110 W., sec. 28, 1.5 miles north of summit of pass, 1.5 miles south of sawmill, 100 feet east of road, in large granite rock; aluminum tablet stamped "7730 RDLG"----- | 7, 738.248 |
| T. 38 N., R. 110 W., sec. 36, 3 miles south of Old Kendall, 0.2 mile south of spring, 30 feet west of road, in limestone rock; aluminum tablet stamped "7669 RDLG"----- | 7, 677.482 |
| T. 38 N., R. 110 W., sec. 23, 0.2 mile southeast of Old Kendall post office (now occupied by United States forest rangers), 50 feet west of fence, 200 feet north of fence corner, 40 feet west of road, in granite rock; aluminum tablet stamped "7717"----- | 7, 725.416 |
| T. 38 N., R. 110 W., sec. 11, 2 miles south of Wells, 5 feet west of road, in large granite rock; aluminum tablet stamped "7980 RDLG"--- | 7, 983.477 |
| T. 39 N., R. 110 W., sec. 36, 1,500 feet south of Wells post office, 15 feet east of road, in granite rock; aluminum tablet stamped "7786 RDLG"----- | 7, 794.334 |
| T. 39 N., R. 110 W., sec. 26, 0.2 mile west of Green River, 2.4 miles northwest of Wells, on ridge, 15 feet west of road, 0.5 mile north of Little Gros Ventre Creek and Jackson's Hole road, 60 feet west of fence, in granite rock; aluminum tablet stamped "7837 RDLG"--- | 7, 845.215 |
| T. 39 N., R. 110 W., sec. 14, 3.9 miles northwest of Wells, 250 feet west of Green River, 50 feet north of small boggy branch, 1 mile south of point where Raccoon Creek turns west, 15 feet west of road, in large granite rock; aluminum tablet stamped "7809 RDLG"----- | 7, 816.855 |
| Big bend 4 miles north of Wells northwest up Wagon Creek, over divide, and down Bacon Creek. | |
| T. 40 N., R. 110 W., sec. 34, 7.2 miles northwest of Wells, 2.7 miles northwest of branding corral, 40 feet north of road; aluminum tablet stamped "8523 RL"----- | 8, 530.725 |
| T. 40 N., R. 110 W., sec. 28, 0.8 mile east of Mosquito Lake, 10 feet north of road, in granite rock; aluminum tablet stamped "8830 RL"----- | 8, 897.163 |

| | Feet. |
|--|-------------|
| Mosquito Lake; surface of water October 30, 1906----- | 8, 876. 1 |
| T. 40 N., R. 110 W., sec. 17, 1.5 miles northwest of Mosquito Lake, on high narrow granite divide, 200 feet north of lone pine tree, in granite rock; aluminum tablet stamped "8984 RL"----- | 8, 992. 456 |
| T. 40 N., R. 110 W., sec. 7, 2.9 miles northwest of Mosquito Lake, summit between Wagon and Bacon creeks, 30 feet south of road, in granite rock; aluminum tablet stamped "9068 RL"----- | 9, 074. 427 |
| T. 40 N., R. 111 W., near northwest corner of sec. 1, 2.4 miles northwest of summit, 3 feet east of road, in 3 by 4 by 4 foot granite rock; aluminum tablet stamped "8733 RL"----- | 8, 740. 696 |
| T. 41 N., R. 111 W., sec. 26, 4.6 miles northwest of summit, 150 feet north of creek, 400 feet northeast of crossing, 15 feet east of road, in granite boulder; aluminum tablet stamped "8313 RL"----- | 8, 321. 231 |

KINNBEAR QUADRANGLE.

[Latitude 43°-43° 30'; longitude 108° 30'-109°.]

From mouth of Bull Lake Creek southeast along road to Fort Washakie.

| | |
|---|-------------|
| Sage Creek, 11.4 miles west of, 300 feet west of brow of bench, 30 feet west of road, on summit, in granite rock; aluminum tablet stamped "5681 RDLG"----- | 5, 688. 231 |
| Sage Creek, 9 miles north of, 0.5 mile south of Wind River, 90 feet south of road, in granite rock; aluminum tablet stamped "5594 RDLG"----- | 5, 602. 099 |
| Sage Creek, 6 miles north of, 3.5 miles east of Wind River, 15 feet north of road, on brow of bench, in sandstone rock; aluminum tablet stamped "6085 RDLG"----- | 6, 092. 583 |
| Sage Creek, 3.5 miles north of, on point of hill, 3,000 feet east of top of bench, 35 feet north of road, in sandstone ledge; aluminum tablet stamped "6077 RDLG"----- | 6, 085. 061 |
| Sage Creek, 3,000 feet north of, on second ridge, 50 feet south of road, in sandstone rock; aluminum tablet stamped "5825 RDLG"----- | 5, 832. 725 |
| Fort Washakie, 7 miles north of, on point of hill, 2 miles east of Sage Creek, 40 feet north of road, in sandstone rock; aluminum tablet stamped "5708 RDLG"----- | 5, 715. 570 |
| Fort Washakie, 4.5 miles north of, on point of small hill, 30 feet north of road, in sandstone rock; aluminum tablet stamped "5771 RDLG"----- | 5, 779. 020 |
| Fort Washakie, 3 miles north of, 15 feet south of road, in sandstone rock; aluminum tablet stamped "5800 RDLG"----- | 5, 807. 381 |
| Fort Washakie, northeast corner of office of J. K. Moore's store, 50 feet south of main road, 150 feet south of gate, at south entrance to parade ground, in face of rock; aluminum tablet stamped "5562 RDLG"----- | 5, 569. 709 |

From Fort Washakie northeast along road to Thermopolis to point 10 miles southwest of Muddy Creek.

| | |
|--|-------------|
| Sulphur Lake; surface of water August 17, 1905----- | 5, 470. 7 |
| Fort Washakie, 2 miles north of, 30 feet east of Sulphur Lake, 10 feet west of hitching rail, 39 feet east of bathhouse; iron post stamped "5468 RDLG"----- | 5, 475. 962 |
| Fort Washakie, 3 miles north of, 400 feet north of bridge over irrigation ditch, 300 feet west of cabin, 15 feet west of road, at fence corner; iron post stamped "5428 RL"----- | 5, 436. 162 |

| | Feet. |
|--|-------------|
| Little Wind River, 1,850 feet northeast of, at forks of road, 10 feet west of main road, 40 feet south of small gully; iron post stamped "5341 RL"----- | 5, 348. 968 |
| Wind River, 6.5 miles southwest of, 700 feet south of summit, 15 feet west of road, on small rise, in sandstone rock; aluminum tablet stamped "5614 RL"----- | 5, 621. 915 |
| Wind River, 5 miles southwest of, 1.4 miles north of summit, 20 feet east of road, in sandstone ledge; aluminum tablet stamped "5508 RL"----- | 5, 513. 186 |
| Wind River, 2 miles southwest of, 1,300 feet north of summit, 20 feet east of main road; iron post stamped "5388 RL"----- | 5, 386. 125 |
| Wind River, at ferry; surface of water August 3, 1905----- | 5, 207. 6 |
| Wind River, 0.5 mile northeast of, on bluff 30 feet east of road; iron post stamped "5300 RL"----- | 5, 307. 828 |
| Muddy Creek, 15 miles south of, 2 miles south of forks of road, 4 miles north of Wind River, 20 feet west of road; iron post stamped "5314 RL"----- | 5, 321. 180 |
| Muddy Creek, 12 miles south of, 6 miles north of Wind River, 30 feet east of road, on small rise, marked by rock mound; iron post stamped "5217 RL"----- | 5, 224. 682 |

KIRWIN QUADRANGLE.

[Latitude 43° 30'-44°; longitude 109°-109° 30'.]

From Circle along road northeast through Kirwin to Antler ranch.

| | |
|--|-------------|
| T. 41 N., R. 105 W., sec. 4, 6 miles northeast of Circle, 0.5 mile northeast of junction of North Fork and Wiggins Fork of Wind River, 0.2 mile northeast of forks of Circle road and Old Dubois-Thermopolis stage road, on point of ridge on east side of river, 50 feet above trees, in large granite rock, marked by rock mound; aluminum tablet stamped "6768 RL"----- | 6, 775. 642 |
| T. 42 N., R. 105 W., sec. 22, 0.2 mile northeast of Double Diamond ranch, 100 feet west of road, at mouth of draw, west side, opposite peculiar-colored clay mounds, on east side of draw, in granite boulder; aluminum tablet stamped "7067 RL"----- | 7, 074. 671 |
| T. 42 N., R. 104 W., sec. 6, in saddle on divide south of Alkali Creek, 100 feet east of rock cut, in irrigation ditch and road, in soft granite ledge, marked by rock mound; aluminum tablet stamped "7571 RL"----- | 7, 578. 938 |
| T. 43 N., R. 104 W., sec. 30, 100 feet north of south boundary line of Yellowstone Forest Reserve, 0.1 mile west of quarter section corner, 50 feet west of road, in side of draw, in large granite rock; aluminum tablet stamped "7790 RL"----- | 7, 797. 986 |
| T. 43 N., R. 104 W., sec. 19, 1.5 miles north of forest-reserve boundary line, 30 feet east of road, in rock on saddle at top of big hill, marked by rock mound; aluminum tablet stamped "8622 RL"----- | 8, 629. 186 |
| T. 43 N., R. 104 W., sec. 8, 100 feet north of small creek, 250 feet east of small cabin, 12 feet east of trail; aluminum tablet stamped "8515 RL"----- | 8, 522. 290 |
| T. 44 N., R. 104 W., sec. 33, on west side of North Fork of Wind River, 3 feet east of main trail, 100 feet from river, 25 feet higher than water, high rocky bluff east on opposite side of river, in granite rock; aluminum tablet stamped "8694 RL"----- | 8, 701. 963 |

Feet.

| | |
|--|------------|
| T. 44 N., R. 104 W., sec. 22, 0.2 mile north of junction of North Fork of Wind River and large creek flowing from northeast, 5 feet east of trail, in granite boulder; aluminum tablet stamped "9002 RL" | 9,009.570 |
| T. 44 N., R. 104 W., sec. 9, 75 feet east of left bank of canyon of North Fork of Wind River, opposite mouth of Elk Creek, 200 feet west of trail, in park, in granite rock; aluminum tablet stamped "9499 RL" | 9,597.100 |
| T. 44 N., R. 104 W., 0.2 mile northwest of northeast corner of sec. 5, in saddle on divide between Bear Creek and North Fork of Wind River, in rock; aluminum tablet stamped "10730 RL" | 10,737.842 |
| Kirwin, 4.8 miles southwest of, 1.5 miles south of coal mine, in rock on divide between Wood River and Wind River; aluminum tablet stamped "11202 RL" | 11,210.112 |
| Kirwin, 3.2 miles west of, 300 feet east of northwest corner of Granda's mining claim, 200 feet east of cabin, in forks of Wood River, in boulder; aluminum tablet stamped "10100 RL" | 10,107.508 |
| Kirwin, 250 feet west of Tawkbury's house, 600 feet southeast of "Mattice B" tunnel, on small ridge, north of road; iron post stamped "9187 RL" | 9,194.794 |
| Kirwin, 4 miles northeast of, on Wood River, 40 feet west of road, 30 feet south of cabin door; iron post stamped "8308 Red Lodge" | 8,315.932 |
| Kirwin, 7 miles northeast of, 0.2 mile north of upper limit of Fish, 400 feet west of small spring draw, 6 feet north of road, at the Rapids of Wood River; iron post stamped "7923 RL" | 7,931.002 |
| John Joyce's house, 500 feet north of, 15 feet south of road near gate, opposite Middle Fork of Wood River; iron post stamped "7319 RL" | 7,323.839 |
| Brown's ranch, 20 feet north of road, 30 feet south of house; iron post stamped "6992 RL" | 6,999.991 |
| T. 47 N., R. 102 W., near south line of sec. 36, 300 feet south of Duck Creek, 0.2 mile west of Schmitzell's ranch house "The Antlers"; iron post stamped "6769 RL" | 6,776.913 |
| From point 6 miles north of Circle east on Thermopolis road to point 2.5 miles east of summit of road at Circle Ridge. | |
| Junction of East and West forks of Wind River, 3 miles east of, 200 feet southeast of road, on point of hill, in hard sandstone, marked by rock mound; aluminum tablet stamped "7334 RL" | 7,341.622 |
| Sand Coulee crossing, 1.5 miles west of, 150 feet north of road, in lava boulder; aluminum tablet stamped "7417 RL" | 7,424.519 |
| Sand Coulee, 0.8 mile east of, 60 feet north of road, in granite rock on summit; aluminum tablet stamped "6981 RL" | 6,983.799 |
| Crow Creek, 2.5 miles east of, 15.2 miles east of junction of East and West forks of Wind River, on summit opposite Black Mountain, 100 feet south of road, in granite rock; aluminum tablet stamped "7585 RL" | 7,592.488 |
| Crow Creek, 5.5 miles east of, 800 feet west of crossing of Red Creek, 20 feet south of road, in granite rock; aluminum tablet stamped "7036 RL" | 7,043.786 |
| Junction of Red and Dry creeks, 4 miles north of, at forks of road, in limestone rock; aluminum tablet stamped "7044 RL" | 7,051.873 |
| Dry Creek and Dry Muddy Canyon, on summit between, in limestone rock; aluminum tablet stamped "7395 RL" | 7,402.306 |

LEWIS GUADRANGLE.

[Latitude 43°-43° 30'; longitude 109°-109° 30'.]

From point near Circle southeast down Wind River to mouth of Bull Creek.

| | Feet. |
|--|-------------|
| Circle, 2 miles north of, 300 feet southwest of quarter corner between secs. 20 and 21, T. 41 N., R. 105 W., at forks of road, 40 feet west of bridge on irrigation ditch, in granite rock; aluminum tablet stamped "6630 RL"----- | 6, 637. 372 |
| Circle, 1 mile west of, on west edge of plateau, 10 feet south of road and gate, in granite rock; aluminum tablet stamped "6695 RL"---- | 6, 708. 093 |
| Circle, northeast corner of post office and ranch, in stone house of Wind River Live Stock Co.; aluminum tablet stamped "6522 RL"--- | 6, 529. 855 |
| Circle, 2.5 miles east of, 100 feet west of Wind River bridge, 20 feet north of road, in rock; aluminum tablet stamped "6416 RDLG"--- | 6, 423. 065 |
| Circle, 4.8 miles east of, 25 feet south of Wind River, 3 feet south of road, in sandstone cliff; aluminum tablet stamped "6322 RDLG"--- | 6, 329. 191 |
| Dunwoody Creek, 1.5 miles west of, 70 feet south of Wind River, 8 feet north of road, in granite rock; aluminum tablet stamped "6235 RDLG"----- | 6, 242. 833 |
| Dunwoody Creek, 130 feet west of, 50 feet south of road, in granite rock; aluminum tablet stamped "6204 RDLG"----- | 6, 211. 783 |
| Dry Creek, 6.5 miles west of, 500 feet south of Wind River, 50 feet south of road, on point of hill; aluminum tablet stamped "6130 RDLG"----- | 6, 138. 030 |
| Dry Creek, 2.5 miles west of, 15 feet south of road, 100 feet west of mail box, in granite rock; aluminum tablet stamped "6038 RDLG"--- | 6, 045. 784 |
| Second crossing of Dry Creek, 300 feet south of, 280 feet northwest of Dry Branch, 60 feet south of road, in rock in fence corner; aluminum tablet stamped "5958 RDLG"----- | 5, 965. 486 |
| JK ranch, 4.5 miles west of, 20 feet north of road, 0.5 mile south of Wind River, 1 mile east of Dry Creek, in rock at fence corner; aluminum tablet stamped "5918 RDLG"----- | 5, 925. 171 |
| JK ranch, 2 miles west of, 1,000 feet south of Wind River, 50 feet north of road on bank of gulch, in granite rock; aluminum tablet stamped "5878 RDLG"----- | 5, 886. 126 |
| JK ranch, 1,500 feet northwest of, 1,400 feet northwest of First Meadow Creek, 300 feet south of fence, 50 feet south of ditch, in sandstone rock; aluminum tablet stamped "5843 RDLG"----- | 5, 850. 426 |
| Bull Lake Creek, 7.4 miles west of, 1.5 miles east of Meadow Creek, 150 feet west of small gully, 30 feet north of road; iron post stamped "5924 RDLG"----- | 5, 931. 305 |
| Bull Lake Creek, 4 miles west of, 100 feet east of bank of gulch, 100 feet south of road, in granite rock; aluminum tablet stamped "5903 RDLG"----- | 5, 911. 067 |
| Bull Lake Creek, 4 miles west of, 100 feet east of bank of gulch, 100 feet south of road, in granite rock; aluminum tablet stamped "5790 RDLG"----- | 5, 798. 009 |
| Sage Creek, 13.4 miles west of, 1 mile west of Bull Lake Creek, 30 feet south of road, in granite rock; aluminum tablet stamped "5790 RDLG"----- | 5, 798. 009 |
| Bull Lake Creek; surface of water August 22, 1905----- | 5, 650 |
| From point 6 miles north of Circle east to Thermopolis (part of line). | |
| Crow Creek, 0.2 mile west of, on edge of mesa where road goes down into Crow Creek, 30 feet south of road, 40 feet southwest of forks of road, in granite rock; aluminum tablet stamped "7072 RL"--- | 7, 079. 536 |

| | Feet. |
|---|-------------|
| Junction of Red and Dry creeks, 0.5 mile northwest of, 1,000 feet northwest of forks of road, 300 feet west of road, in granite rock at foot of ridge; aluminum tablet stamped "6712 RL"----- | 6, 719. 768 |

LOVELL QUADRANGLE.

[Latitude 44° 30'-45°; longitude 108°-108° 30'.]

From Germania northwest along road to Garland.

| | |
|---|-------------|
| Germania, 0.3 mile northwest of, 100 feet northeast of W. Peper's house, southeast angle of forks of road to Hyattville; iron post stamped "4412 RL"----- | 4, 420. 365 |
| Germania, 3.8 miles northwest of, 25 feet west of road, near small hillock of sage brush on north brow of hill; iron post stamped "4482 RL"----- | 4, 490. 290 |

MOUNT LEIDY QUADRANGLE.

[Latitude 43° 30'-44°; longitude 110°-110° 30'.]

From May's ranch east up Gros Ventre River and Fish Creek to Twogwotee Pass.

| | |
|--|-------------|
| Crystal Creek, 1 mile southeast of mouth, 0.8 mile southeast of cabin, at foot of low hills; in large gray boulder; copper bolt stamped "7068 B. & M."----- | 7, 071. 172 |
| T. 42 N., R. 111 W., about center of sec. 31 (unsurveyed), north side of Fish Creek, opposite mouth of Bacon Creek, 20 feet southeast of trail, 1 mile northeast of cabin; in rock 8 by 8 by 8 feet; copper bolt stamped "7521 B. & M."----- | 7, 523. 434 |
| T. 42 N., R. 111 W., on west side of North Fork of Fish Creek, 1.2 miles above Fish Creek, at mouth of small gulch, east side of trail, in sandstone rock 5 by 5 by 5 feet; copper bolt stamped "7715 B. & M."----- | 7, 717. 922 |
| T. 42 N., R. 111 W., 4.2 miles above mouth and 70 feet west of North Fork of Fish Creek, at rocky point, 800 feet north of point where trail leads up creek, in rock 4 by 4 feet by 1 foot; copper bolt stamped "7867 B. & M."----- | 7, 869. 711 |
| T. 43 N., R. 110 W., 7.9 miles above mouth of North Fork of Fish Creek, 60 feet west of left tributary creek, 600 feet north of its mouth, in top of rock 30 by 30 by 12 inches; copper bolt stamped "8186 B. & M."----- | 8, 188. 475 |
| T. 43 N., R. 110 W., 2.6 miles south of divide between North Fork of Fish Creek and Blackrock Creek, at head of small creek, 25 feet north of east-west bend in Fish Creek, in sandstone rock 8 by 3 feet by 1 foot; copper bolt stamped "8615 B. & M."----- | 8, 618. 206 |
| T. 43 N., R. 111 W., 1 mile west of northeast corner, on top of divide between Fish and Blackrock creeks, in rock 2 by 2 by 5 feet; copper bolt stamped "9611 B. & M."----- | 9, 613. 623 |
| Twogwotee Pass, 0.5 mile west of, 20 feet south of road, in rock 8 by 8 inches and 8 inches above ground; copper bolt stamped "9658 B. & M."----- | 9, 661. 180 |
| Twogwotee Pass, 1.5 miles east of, 50 feet south of road, 700 feet west of small marsh where road enters timber, in rock 12 by 24 by 18 inches; copper bolt stamped "9354 B. & M." (spur line)----- | 9, 856. 970 |

From Twogwotee Pass northwest down Blackrock Creek and Buffalo Fork of Snake River to Buffalo Ford.

| | Feet. |
|--|-------------|
| Twogwotee Pass, 4.2 miles northwest of, 5 feet west of road, 0.2 mile south of point where road enters timber, in rock 5 by 8 by 8 feet; copper bolt stamped "9204 B. & M."----- | 9, 207. 511 |
| Twogwotee Pass, 8.2 miles northwest of, 1.5 miles north of forks of Blackrock Creek, at south end of Blackrock meadows, 60 feet north of road, in limestone rock 5 by 10 by 10 feet; copper bolt stamped "8653 B. & M."----- | 8, 655. 724 |
| Twogwotee Pass, 16 miles northwest of, 2.5 miles south of Buffalo Fork of Snake River, 400 feet west of round hill, 60 feet west of road, in rock 6 by 8 by 12 feet; bronze tablet stamped "7776 B. & M."----- | 7, 779. 641 |
| Buffalo Ford, 6.4 miles northeast of, south side of Cherry's hay meadow, 400 feet north of Buffalo Fork, on hillside, 470 feet north of southwest corner of sec. 21, T. 45 N., R. 118 W., in rock 4 by 6 by 10 feet; copper bolt stamped "6793 B. & M."----- | 6, 795. 844 |
| From Dick Turpin meadow northeast along trail up Buffalo Fork (spur line). | |
| T. 45 N., R. 112 W., sec. 14, 1,000 feet north of trail, 150 feet from edge of timber, on hillside, at east border of Dick Turpin meadow, in rock 2 by 3 by 3 feet beside a still larger bowlder; copper bolt stamped "6932 B. & M."----- | 6, 934. 294 |
| Bear Cub Pass, T. 45 N., R. 111 W., 30 feet southwest of trail, near point where trail passes over rocky hill; copper bolt stamped "8042 B. & M."----- | 8, 045. 430 |

OTTO QUADRANGLE.

[Latitude 44°-44° 30'; longitude 108°-108° 30'.]

From point near Flowing Well northeast along road through Burlington to Germania.

| | |
|---|-------------|
| George Baker's ranch, 800 feet southwest of, 900 feet east of Graves's ranch, at forks of road, at telephone pole 2107; iron post stamped "4492 RL"----- | 4, 500. 489 |
| Burlington, corner of Main and Davis streets, 50 feet north of, in foundation of small frame drug store; aluminum tablet stamped "4423 RL"----- | 4, 431. 388 |
| Burlington, 3 miles north of, southeast angle of crossroads, 1,000 feet east of house occupied by N. C. Jensen (Neff house); iron post stamped "4522 RL"----- | 4, 530. 198 |

From Germania to Otto.

| | |
|--|-------------|
| Germania, 3.3 miles southeast of, 8 feet south of corner of fence, 3 feet west of road; iron post stamped "4384 RL"----- | 4, 392. 091 |
| Germania, 6.5 miles southeast of, 1.5 miles south of edge of bench, 35 feet east of road, in middle of bench; iron post stamped "4629 RL"----- | 4, 636. 701 |
| Otto, 4.8 miles northwest of, 40 feet north of road on lower bench, 780 feet east of road forks; iron post stamped "4424 RL"----- | 4, 432. 606 |
| Otto, 1.5 miles northwest of, at northwest angle of crossroads, 15 feet south of telephone pole 2978; iron post stamped "4155 RL".... | 4, 163. 432 |

Post.

Otto, in northwest corner of foundation of Pioneer Hotel; aluminum tablet stamped "4109 RL"----- 4, 117. 481

From Burlington through Otto to point 2.5 miles east of Basin.

Burlington, 0.5 mile east of, 600 feet east of Kinniman's house, 30 feet south of road, 10 feet north of ditch; iron post stamped "4404 RL"----- 4, 411. 737

Burlington, 3.5 miles east of, 1 mile east of Hill's ranch, 10 feet north of Hill road; iron post stamped "4384 RL"----- 4, 391. 716

Burlington, 6.5 miles east of, 600 feet north of ditch and fence, 50 feet south of road, on side of small knoll; iron post stamped "4319 RL"----- 4, 327. 579

Otto, 1 mile northwest of, southwest angle of crossroads, at fence corner, at telephone pole 2978; iron post stamped "4155 RL"----- 4, 163. 473

Otto, 3 miles east of, 1,000 feet southwest of Blakesley's house, 75 feet north of forks of roads, in sandstone ridge; aluminum tablet stamped "4093 RL"----- 4, 101. 328

Anderson's ranch, 1 mile east of, 0.25 mile east of junction of Otto Basin stage road and Garland Basin freight road, 10 feet north of road on ridge; iron post stamped "4025 RL"----- 4, 088. 308

Basin, 3 miles west of, 600 feet north of telephone pole 3354, 75 feet south of road, in sandstone ledge; aluminum tablet stamped "4086 RL" (rock mound on top)----- 4, 004. 386

Basin, 1 mile northwest of, 0.2 mile northwest of junction of road and telephone line, 50 feet southwest of road in draw; iron post stamped "4021 RL" (rock mound on top)----- 4, 028. 969

Basin, in southwest corner of Cook's store building; aluminum tablet stamped "3864 RL"----- 3, 872. 941

Basin, in west front of Patton's store building (drug store and post office); aluminum tablet stamped "3862 RL"----- 3, 870. 102

Basin, 2.6 miles southeast of, 40 feet north of road, on point of bald hill; iron post stamped "3895 RL"----- 3, 903. 504

From Basin south along road toward mouth of Nowood River.

Basin, 3 miles south of, 20 feet north of point where telephone line crosses road at telephone pole 1809; iron post stamped "3903 RL"----- 3, 911. 502

Basin, 6 miles south of, 1,000 feet southwest of Bonnie Rogers's house, 100 feet west of road, 40 feet west of ditch, in sandstone rock; aluminum tablet stamped "3872 RL"----- 3, 881. 051

RIVERTON QUADRANGLE.

[Latitude 43°-43° 30'; longitude 108°-108° 30'.]

From Fort Washakie-Thermopolis road 10 miles southwest of Muddy Creek to point 2 miles south of Nostrum's house on Red Creek.

Muddy Creek, 8 miles south of, 1,000 feet south of summit, in forks of road, 20 feet east of signpost, 30 feet east of main road; iron post stamped "5302 RL"----- 5, 809. 842

Muddy Creek, 6.5 miles south of, in rock 12 feet west of road, between two big sandstone buttes one on each side of the road; aluminum tablet stamped "5233 RL"----- 5, 240. 815

| | Feet. |
|---|-------------|
| Muddy Creek, 3.8 miles south of, 300 feet east of road, in sandstone ledge; aluminum tablet stamped "5257 RL"----- | 5, 264. 127 |
| Muddy Creek, 40 feet west of, on north bank, 250 feet east of John Voss's house, 20 feet west of road; iron post stamped "5039 RL"--- | 5, 046. 471 |
| John Golayar's (Mexican John's) house, 9.5 miles south of, 1 mile south of creek, 20 feet east of road, on point of small hill; iron post stamped "5042 RL"----- | 5, 049. 680 |
| John Golayar's house, 6.5 miles south of, 300 feet west of creek, 100 feet west of road, 1,200 feet south of creek crossing, in southeast corner of large sandstone ledge; aluminum tablet stamped "4931 RL"----- | 4, 938. 570 |
| John Golayar's house, 3.5 miles south of, 20 feet west of road, 300 feet west of small dry creek; iron post stamped "5064 RL"----- | 5, 071. 512 |
| John Golayar's house, 250 feet east of, 4 feet north of mail-box post, 10 feet east of road; iron post stamped "5346 RL"----- | 5, 353. 140 |
| Nostrum's house on Red Creek, 9.5 miles south of, 2 miles north of Sheep Creek, at summit of Owl Mountains, 15 feet west of road, in lime rock; aluminum tablet stamped "6244 RL"----- | 6, 251. 655 |
| Nostrum's house on Red Creek, 7 miles south of, 2.8 miles south of summit, 15 feet west of road, in sandstone on rocky point; aluminum tablet stamped "5788" (marked by rocky mound)----- | 5, 795. 671 |
| Nostrum's house on Red Creek, 4 miles south of, on hill 25 feet west of road; iron post stamped "5283 RL"----- | 5, 240. 688 |

**SUNSHINE QUADRANGLE (INCLUDING MEETEETSE AND OREGON BASIN
15' QUADRANGLES).**

[Latitude 44°-44° 30'; longitude 108° 30'-109°.]

From Meeteetse southeast along road to point 16 miles northwest of Il.

| | |
|---|-------------|
| Meeteetse, 3 miles southeast of, on divide 125 feet west of road, in sandstone ledge; aluminum tablet stamped "6340 RDLG"----- | 6, 346. 260 |
| Meeteetse, 5 miles southeast of, 4 miles northwest of Buffalo Creek, 15 feet west of road, in sandstone rock marked by rock mound; aluminum tablet stamped "6057 RL"----- | 6, 063. 592 |
| Crossing of Buffalo Creek, 0.2 mile northwest of, 100 feet east of road, in sandstone rock 2 by 2 by 6 feet with mound of rock on top; aluminum tablet stamped "5659 RL"----- | 5, 665. 907 |
| Moon's ranch, 3 miles northwest of, 0.5 mile south of Buffalo Creek, 0.5 mile south of shearing pens, 200 feet south of road, in sandstone rock with mound of rock on top; aluminum tablet stamped "5576 RL"----- | 5, 583. 091 |
| Moon's house, 500 feet east of, 400 feet north of Gooseberry Creek, 200 feet west of road, in sandstone ledge; aluminum tablet stamped "5497 RL"----- | 5, 503. 518 |

From Meeteetse southwest along road to Antler's ranch.

| | |
|--|-------------|
| Meeteetse, south end of Main Street, at southwest corner of block at stone church; iron post stamped "5789 RL"----- | 5, 797. 028 |
| Meeteetse, 3 miles southwest of, 0.2 mile southwest of Iron Creek, 5 feet north of road, 3 feet south of fence; iron post stamped "5932 RL"----- | 5, 940. 008 |
| Meeteetse, 6.2 miles southwest of, 0.2 mile south of mouth of Wood River, 25 feet south of road, 50 feet north of River's house, at front gate; iron post stamped "6076 RL"----- | 6, 084. 047 |

Feet.

| | |
|---|-----------|
| Meeteetse, 9 miles southwest of, 0.25 mile west of Brown's ranch house, 10 feet east of road at Brown's and Watson's mail boxes; iron post stamped "6344 RL"----- | 6,751.952 |
| From Sunshine southeast along road to point near Renner's ranch (single spur line). | |
| Sunshine, 5.5 miles southeast of, 1 mile west of Renner's ranch, in sec. 31, T. 47 N., R. 100 W., a short distance north of point where road crosses Gooseberry Creek; iron post stamped "6285"----- | 6,287.194 |
| From Meeteetse northwest along road 5 miles north of stage station on Cody road. | |
| Meeteetse, 3 miles north of, in north angle of forks of Cody and Basin roads, at stone fence; iron post stamped "5682 RL"----- | 5,690.183 |
| Meeteetse, 10 miles north of, on right bank of Cottonwood Creek, 10 feet east of road, 40 feet south of creek, 40 feet west of telephone pole 838; iron post stamped "6111 RL"----- | 6,119.136 |
| Meeteetse, 13 miles north of, on divide between forks of Dry Creek, 6 feet south of road between telephone poles 735 and 736; iron post stamped "6159 RL"----- | 6,167.114 |
| Stage station on Dry Creek, 100 feet south of barn, 10 feet west of road; iron post stamped "5553 RL"----- | 5,561.482 |
| Stage station, 4 miles north of, in gulch near forks of stage road and old road to Frost's ranch, 400 feet west and opposite telephone pole 522; iron post stamped "5708 RL"----- | 5,715.956 |
| From Meeteetse northeast to point near flouring mill on Burlington road. | |
| Meeteetse, 5 miles northeast of, 0.8 mile northeast of Merrill's house, 1,000 feet north of Grey Bull River, 1 foot south of road, in sandstone rock; aluminum tablet stamped "5543 RL"----- | 5,552.152 |
| Meeteetse, 8 miles northeast of, 1 mile north of ranch house, 0.5 mile northeast of Cottonwood Creek, 10 feet east of road, 40 feet south of draw, 50 feet north of ditch, in sand rock; aluminum tablet stamped "5455 RL"----- | 5,462.950 |
| Virtue's ranch house, 125 feet east of, 150 feet north of road, 5 feet north of ditch, in sand rock; aluminum tablet stamped "5287 RL"----- | 5,295.014 |
| Y U ranch house, 0.7 mile west of, 100 feet northwest of gate, 15 feet north of road, near mail box; iron post stamped "5220 RL"--- | 5,228.031 |
| Whilsett's house, 800 feet northwest of, 1,000 feet west of Coyote Canyon, 60 feet north of road, in sandstone; aluminum tablet stamped "5015 RL"----- | 5,023.216 |
| Old Bill Beck ranch, 0.5 mile north of, 150 feet south of telephone pole 1725, 30 feet south of road, in forks; iron post stamped "4944 RL"----- | 4,952.108 |
| Junerfield's house, 0.7 mile northwest of, 40 feet north of road, 50 feet south of sandstone bluff, in sandstone rock; aluminum tablet stamped "4849 RL"----- | 4,857.653 |
| Fenton, 0.5 mile northeast of, 20 feet north of road; iron post stamped "4778 RL"----- | 4,796.011 |
| Flouring mill, about 2 miles west of, 0.5 mile northeast of crossing of Wylie ditch, 10 feet southeast of road, 3 feet south of telephone pole 2015; iron post stamped "4593 RL"----- | 4,601.097 |

From point on Meeteetse-Cody stage road 1 mile west of Wiley north along highway to point 1 mile northwest of Wiley, 1 mile south of Burlington road, and 0.2 mile north of Wiley Canal.

| | Feet. |
|--|-------------|
| Wiley, 1.5 miles northeast of, on rock pier of foundation under north-west side of old ranch house, old road running northeast, 500 feet northwest of house, ridge to northwest about 0.2 mile from house, large hole in northwest corner of yard; point cut in rock, marked "5325"----- | 5, 323. 40 |
| Wiley Canal, 75 feet from canal, where same is broken by gulch running east, rocky cliffs and ridge to northwest; point cut on large bowlder, marked "5275"----- | 5, 273. 49 |
| Wiley Canal, 400 feet northeast of bushy pine tree, point where canal makes a decided bend to east, 10 feet from center of canal, Dry Lake in Oregon basin about 1 mile to east, on top of large rock on canal bank; aluminum tablet stamped "5261"----- | 5, 259. 371 |
| Wiley, 1 mile north of, 0.2 mile north of Wiley Canal, just east of road over low point of ridge, 1 mile south of Burlington road, on large single bowlder 10 feet from road; aluminum tablet stamped "5318"----- | 5, 316. 045 |

From point 1 mile north of Wiley west along highway to point 4 miles south-east of Cody.

| | |
|---|------------|
| Wiley, on east side of old road running along range or ridge north of, road runs from Sage Creek into Oregon basin, about 5 miles south-east of Cody; point on rock near section corner, marked "5177"----- | 5, 175. 27 |
| Cody, 5 miles southeast of, on west end of flume crossing Sage Creek, south side of flume; cross on top of post, marked "5118"----- | 5, 116. 70 |

From point 1 mile south of Burlington road southeast and southwest along highway to point on Meeteetse-Cody road 0.8 mile west of Elk Butte.

| | |
|---|-------------|
| Mudd Springs, 2 miles west of, on west side of Meeteetse-Cody freight road; cross on rock, marked "5128"----- | 5, 126. 41 |
| Meeteetse-Cody freight road, on small hill 200 feet west of, hole cut in rock, marked "5163"----- | 5, 161. 43 |
| Eagle coal mine, 0.2 mile north of, 0.2 mile east of north end of Cedar Ridge, 100 feet north of road, 5 miles east of Wiley on Oregon Coulee, south end of small ridge; cut in rock on pile of rocks, marked "5167"----- | 5, 164. 94 |
| Eagle coal mine, 0.5 mile north of, 1,000 feet west of Cedar Ridge, between south fork of Oregon Coulee and Cedar Ridge, 60 feet east of road, on large bowlder 1½ feet above ground; aluminum tablet stamped "5211"----- | 5, 209. 060 |
| Elk Butte, 2 miles northeast of, west of Cedar Ridge, on south fork of Oregon Coulee, 1,000 feet east of road; point cut in large rock, marked "5261"----- | 5, 258. 80 |
| Elk Butte, just west of, section quarter corner, on south side of road running from bench mark 5708, Red Lodge, east along flat toward Cedar Ridge; point cut in rock, marked "5592"----- | 5, 589. 92 |
| Elk Butte, 0.8 mile west of, on Meeteetse-Cody stage road, on upper Oregon Coulee; iron post stamped "5708 RL"----- | 5, 715. 956 |

From junction of Meeteetse-Cody stage road and Old Burlington road east, south, and west along highway to Meeteetse-Cody stage station on Dry Creek, 18 miles south of Cody and 18 miles north of Meeteetse.

| | Feet. |
|--|-------------|
| Mudd Springs, 1.8 miles east of, near point where canal cuts through rocky bank and turns to north, 75 feet south of canal, on large bowlder; aluminum tablet stamped "5114"----- | 5, 112. 681 |
| Mudd Springs, 2.6 miles southeast of, 0.5 mile north of Old Burlington road, 2.5 miles northeast of point where Meeteetse-Cody freight road crosses Oregon Coulee, on large bowlder just east of group of bowlders, 2 feet above ground; aluminum tablet stamped "5119"--- | 5, 117. 198 |
| Old Burlington road, 25 feet north of, just north of Oregon Coulee; point cut on slab rock, marked "5101"----- | 5, 999. 26 |
| Meeteetse-Cody freight road, 1 mile east of, on top of ridge, in big rock pile; point cut on bowlder, marked "5167"----- | 5, 165. 77 |
| Dry Creek crossing, 900 feet north of, 10 feet west of Cody-Meeteetse freight road; on ledge rock 4 feet above ground, marked "5147"--- | 5, 145. 182 |
| Dry Creek, 1.5 miles southwest from P.B.M. 5147, east side of road leading from Dry Creek crossing to stage station; point cut on slab rock under cliff, marked "5191"----- | 5, 189. 59 |
| T. 50 N., R. 100 W., in sec. 2, 4.2 miles east of stage station, 1,000 feet northeast of junction of North and South forks of Dry Creek, 75 feet from draw from southeast, 120 feet southwest of bushy green tree, in lowest ledge of rock, south end of ledge, 1 foot above ground; aluminum tablet stamped "5315"----- | 5, 312. 964 |
| Stage station, 0.5 mile east of, sheep pens, 7 feet east of bunk house; glass bottom of iron pipe sunk in ground, marked "5511"----- | 5, 508. 98 |
| Meeteetse-Cody stage station on Dry Creek, 18 miles south of Cody, 18 miles north of Meeteetse; iron post stamped "5563 Red Lodge"--- | 5, 561. 482 |

THERMOPOLIS QUADRANGLE.

[Latitude 43° 30'-44°; longitude 108°-108° 30'.]

From point near Padlock ranch east along road to Thermopolis.

| | |
|--|-------------|
| Thermopolis 11.5 miles west of, 0.2 mile north of crossing of Owl Creek, at point where road turns from due north to due east, on west side of lane, 1 foot east of fence, 2 feet south of wire gate, in sandstone rock; aluminum tablet stamped "4981 RL"----- | 4, 988. 505 |
| Thermopolis, 8.3 miles west of, 3.5 miles east of crossing of Owl Creek, 1,000 feet west of board cabin, 0.2 mile east of log cabin, 25 feet south of road, 1 foot north of cedar post, in wire fence, in sandstone rock; aluminum tablet stamped "4851 RL"----- | 4, 858. 602 |
| Thermopolis, 6.3 miles west of, 1 mile northwest of Junkin's ranch, 15 feet south of road, at forks of road, old road leading due south, 4 feet west of post, in bowlder; aluminum tablet stamped "4747 RL"----- | 4, 754. 003 |
| Thermopolis, 4.5 miles east of, 300 feet north of creek, 20 feet north of road, in ledge on east end of sandstone ridge; aluminum tablet stamped "4614 RL"----- | 4, 620. 091 |
| Thermopolis, 3 miles west of, 1.5 miles south of Owl Creek, 0.25 mile north of draw with water in it, 30 feet east of road, on a summit, in granite rock marked by rock mound; aluminum tablet stamped "4704 RL"----- | 4, 711. 649 |
| Thermopolis, east side of school building, 3 feet north of door, 2 feet from ground; aluminum tablet stamped "4389 RL"----- | 4, 396. 628 |

From Thermopolis northwest along road to point near Gwins ranch.

| | Feet. |
|---|-------------|
| Thermopolis, 3 miles northwest of, 500 feet south of forks of road, 300 feet north of forks of road near signpost, 400 feet west of river, 10 feet east of road, in sandstone marked by rock mound on top; aluminum tablet stamped "4330 RL"----- | 4, 337. 278 |
| Thermopolis, 5.7 miles northwest of, 1.2 miles west of Bighorn River, 0.8 mile southeast of Owl Creek, in saddle on divide between Bighorn River and Owl Creek, 20 feet north of road, in sandstone rock; aluminum tablet stamped "4560 RL"----- | 4, 567. 410 |
| Thermopolis, 8.7 miles northwest of, 2 miles northwest of Owl Creek, 600 feet south of road, 50 feet southeast of draw, in north end of stone ledge marked by rock mound; aluminum tablet stamped "4602 RL"----- | 4, 603. 823 |
| Owl Creek, 4 miles northwest of, 1 mile northwest of divide north of Owl Creek, in sandstone rock 1 foot west of road and on narrow ridge; aluminum tablet stamped "4699 RL"----- | 4, 706. 240 |
| Harris ranch (stage station), on west side of draw, 10 feet west of well, 100 feet east of stone chicken house, in sandstone rock; aluminum tablet stamped "4660 RL"----- | 4, 666. 585 |
| Harris ranch (stage station), 3 miles northwest of, 20 feet north of road, on ridge, in sandstone rock; aluminum tablet stamped "4846 RL"----- | 4, 853. 473 |
| Harris ranch (stage station), 6.7 miles northwest of, 3 miles southeast of Cottonwood Creek, 20 feet north of road, in sandstone; aluminum tablet stamped "4991 RL"----- | 4, 997. 870 |
| Morrison's ranch, 1 mile east of, 0.3 mile southeast of crossing of Cottonwood Creek, 100 feet west of road, on east end of sandstone ridge; aluminum tablet stamped "4945 RL"----- | 4, 952. 317 |
| Morrison's ranch, 3 miles northeast of, 75 feet east of road, on hill, in sand rock marked by rock mound; aluminum tablet stamped "5127 RL"----- | 5, 134. 259 |
| Gwins ranch, 1,000 feet southeast of, 0.5 mile west of crossing of Grass Creek, 0.2 mile south of Grass Creek, 10 feet from either road, at forks, in sandstone lava rock marked by rock mound; aluminum tablet stamped "5130 RL"----- | 5, 136. 510 |

From Thermopolis southwest to point near Nostrum's ranch.

| | |
|--|-------------|
| Thermopolis, 2.6 miles south of, in forks of road, 300 feet west of creek, 50 feet west of signboard; iron post stamped "4685 RL"--- | 4, 692. 706 |
| Thermopolis, 6.2 miles south of, 30 feet east of road, in gulch, on sandstone ridge marked by rock mound; aluminum tablet stamped "4986 RL"----- | 4, 993. 215 |
| Summit, 0.5 mile south of, 1 mile north of Red Creek, 20 feet east of road, in sandstone ledge; aluminum tablet stamped "5181 RL"--- | 5, 188. 489 |
| Nostrum's house on Red Creek, 1.5 miles south of, 25 feet west of road, on point of small hill, marked by rock mound; iron post stamped "4908 RL"----- | 4, 915. 731 |

From point 8 miles north of Thermopolis northeast to point near Worland.

| | |
|---|-------------|
| Thermopolis, 7.2 miles north of, southwest corner of entrance to lane, 1,000 feet north of Owl Creek, 15 feet west of road; iron post stamped "RDLG"----- | 4, 302. 541 |
|---|-------------|

| | Feet. |
|--|-------------|
| Winchester, 10 miles south of, 150 feet southeast of Tom Allen's house, at southeast corner of yard, at junction of telephone lines, 5 feet west of main road; iron post stamped "4811 RDLG"----- | 4, 320. 185 |
| Winchester, 7 miles south of, 0.6 mile south of Watson's mail box, 250 feet north of bed of gulch, 15 feet east of road, in sandstone ledge; aluminum tablet stamped "4335 RDLG"----- | 4, 343. 684 |
| Winchester, 2.7 miles south of, 0.5 mile west of Bighorn River, 0.5 mile west of cabin, 250 feet west of wire fence, 800 feet north of fence corner, 20 feet west of road, in sandstone rock; aluminum tablet stamped "4220 RDLG"----- | 4, 229. 153 |
| Winchester, 1,400 feet north of post office, 14.7 miles south of Worland, 20 feet east of road, on slope of bench to creek, in sandstone ledge; aluminum tablet stamped "4224 RDLG"----- | 4, 232. 377 |
| Winchester, 1.6 miles north of, 50 feet south of south bank of canyon, 25 feet west of road, 0.5 mile west of Bighorn River; iron post stamped "4245 RDLG"----- | 4, 253. 755 |
| Winchester, 5.1 miles north of, 1.3 miles south of Gooseberry Creek, 1 mile west of Bighorn River, 25 feet west of road, opposite telephone pole 634; iron post stamped "4172 RDLG"----- | 4, 180. 280 |
| Worland, 6.5 miles south of, 30 feet west of road, 30 feet east of telephone pole 745, in sandstone ledge marked by rock mound; aluminum tablet stamped "4178 RDLG"----- | 4, 187. 064 |
| Worland, 3 miles south of, at corner of field fence, 20 feet south of bridge over ditch, 10 feet east of road; iron post stamped "4140 RDLG"----- | 4, 148. 248 |

VICTOR QUADRANGLE.

[Latitude 43° 30'-44°.; longitude 111°-111° 30'.]

Bench marks on Idaho-Wyoming State line.

| | |
|--|-------------|
| Idaho-Wyoming State line, 8 feet north of road; bronze tablet stamped "6681 B. & M."----- | 6, 684. 130 |
| Alta, 1.5 miles west of, 1,000 feet northwest of Rigby's house, at mile-post 192, Wyoming-Idaho State line; iron post----- | 6, 404. 651 |

YOUNTS PEAK QUADRANGLE.

[Latitude 43° 30'-44°.; longitude 109° 30'-110°.]

From Continental Divide along road northeast to mouth of Du Noir Creek, thence down Wind River to point 3 miles northwest of Circle.

| | |
|--|-------------|
| T. 41 N., R. 108 W., sec. 19, 1 mile south of summit, 2.5 miles north of branch of Warm Springs Creek, 30 feet west of road, in large granite rock; aluminum tablet stamped "9556 RDLG"----- | 9, 563. 450 |
| T. 41 N., R. 108 W., sec. 17, 4.2 miles south of Warm Springs, 0.5 mile north of summit, in granite rock 6 feet west of road; aluminum tablet stamped "9755 RDLG"----- | 9, 762. 571 |
| T. 41 N., R. 108 W., near line between secs. 5 and 8, 2.2 miles south of Warm Springs Creek, 20 feet east of road, in granite rock; aluminum tablet stamped "9240 RDLG"----- | 9, 247. 601 |
| T. 41 N., R. 108 W., near northeast corner of sec. 4, 1 mile south of Warm Springs Creek, 25 feet east of road, on first summit; iron post stamped "9129 RDLG"----- | 9, 136. 848 |

| | Feet. |
|---|-------------|
| T. 42 N., R. 108 W., near line between secs. 27 and 28, 8 miles southwest of mouth of Du Noir Creek, 0.5 mile north of Warm Springs Creek, 500 feet southwest of Joe Affenball's gate, 60 feet east of fence corner, 50 feet east of road, 1,500 feet north of flume, in sandstone rock; aluminum tablet stamped "8385 RDLG"----- | 8, 898. 180 |
| T. 42 N., R. 108 W., sec. 23, 1.2 miles southwest of mouth of Du Noir Creek, 6 feet north of road, in sandstone rock; aluminum tablet stamped "7793 RDLG"----- | 7, 800. 921 |
| T. 42 N., R. 108 W., near line between secs. 23 and 24, 8.5 miles northwest of Dubois, 0.5 mile northwest of junction of main road and Clark's sawmill road, 300 feet north of Wind River, 2 feet south of road, in granite rock; aluminum tablet stamped "7242"----- | 7, 249. 357 |
| T. 42 N., R. 107 W., sec. 30, 6.1 miles northwest of Dubois, 0.25 mile north of Grant Nepper's house, on brow of second bench, in black lava rock 10 feet east of road, marked by rock mound; aluminum tablet stamped "7177 RL"----- | 7, 184. 425 |
| T. 42 N., R. 107 W., sec. 34, 2.9 miles northwest of Dubois, 8 feet east of front gate of O. O. Green's ranch, near picket fence, 20 feet south of road, in sandstone rock; aluminum tablet stamped "7011 RL"----- | 7, 018. 535 |
| Dubois, 2 feet north of front at northeast window of F. A. Welty's store; iron post stamped "6909 RDLG"----- | 6, 918. 645 |
| Dubois, 200 feet northeast of F. A. Welty's store, in forks of Wind River and Horse Creek, in front of sandstone cliff; aluminum tablet stamped "6931 RL"----- | 6, 938. 175 |
| T. 41 N., R. 106 W., sec. 15, 6.5 miles west of Circle, 0.2 mile east of William Carson's ranch, in large granite rock monument; aluminum tablet stamped "6883 RL"----- | 6, 890. 399 |

From Dubois northeast along road to Circle-Kirwin road.

| | |
|--|-------------|
| T. 42 N., R. 106 W., sec. 31, 3 miles west of summit, 2.5 miles northeast of Dubois, 12 feet north of road, at entrance to lane; iron post stamped "7227 RDLG"----- | 7, 234. 799 |
| T. 42 N., R. 106 W., near line between secs. 21 and 28, on summit of divide between Horse and Wiggins creeks, 20 feet west of road; iron post stamped "7616 RDLG"----- | 7, 624. 289 |
| T. 42 N., R. 106 W., sec. 24, 4 miles east of summit, 100 feet north of north bank of gulch, 30 feet north of road; iron post stamped "7093 RDLG"----- | 7, 100. 717 |

From mouth of Du Noir Creek northwest to Twogwotee Pass.

| | |
|--|-------------|
| T. 43 N., R. 108 W., sec. 35, 2 miles north of Union, 0.2 mile east of lane at point where road turns due west, 100 feet east of fence, 50 feet west of road, 200 feet southeast of gate, 500 feet south of small draw of creek, on south side of knoll, in small rock; aluminum tablet stamped "7351 RL"----- | 7, 358. 425 |
| T. 43 N., R. 108 W., sec. 28, 250 feet southwest of summit between Du Noir River and Long Creek, 100 feet south of road, in granite rock with mound of rock on top; tablet stamped "8066 RL"----- | 8, 073. 667 |
| T. 43 N., R. 109 W., sec. 35, in saddle or pass on summit between Long Creek and Wind River, 150 feet north of road, on grassy knoll surrounded by sagebrush, in rock marked by rock mound; aluminum tablet stamped "7916 RL"----- | 7, 923. 247 |

| | Feet. |
|---|-------------|
| T. 43 N., R. 100 W., sec. 20, 0.3 mile northwest of Tom Moriarty's ranch, 0.2 mile southeast of John Burlingham's ranch, 300 feet south of road, 300 feet north of river, 60 feet north of trail, 35 feet southeast of small pine tree trimmed and blazed, 100 feet northwest of three large pine trees, south side of hill, in soft sandstone rock; aluminum tablet stamped "7342 RL"----- | 7, 846. 777 |
| T. 43 N., R. 110 W., sec. 1, in park at junction of main road and road leading to Brooks Lake, in granite rock marked by rock mound; aluminum tablet stamped "8895 RL"----- | 8, 602. 277 |

From Mount Liddy Quadrangle spur line northeast up Buffalo Fork.

| | |
|--|-------------|
| T. 45 N., R. 109 W., 31.6 miles northeast of Buffalo Ford, 0.5 mile below old railroad camp, 0.5 mile below Buffalo Creek, near edge of canyon on north side of Buffalo Creek; copper bolt stamped "8108 B. & M."----- | 8, 110. 755 |
|--|-------------|

Ilo Quadrangle.

BIG HORN COUNTY.

The elevations in the following list were determined by primary leveling and accord with the 1912 adjustment at Gwin's ranch and a point 8 miles northwest of Old Ilo. One line is a closed circuit joining these points, but the elevations on the two lines in the south half of the quadrangle are preliminary, the proposed circuits being uncompleted. Orthometric and rod corrections have been applied.

The work was done in 1912 by R. R. Monbeck.

ILO QUADRANGLE.

[Latitude 43° 45'-44°; longitude 108° 30'-108° 45'.]

From Gwin's ranch west 5 miles, thence northwest 5 miles, thence northeast to point 8 miles northwest of Old Ilo.

| | Feet. |
|--|-------------|
| Old Ilo, 600 feet southeast of, at forks of road, 150 feet southeast of fence corner; chiseled hole in rock ledge----- | 5, 200. 41 |
| Old Ilo, 0.7 mile southwest of, west side of gulch entering Grass Creek, 150 feet south of road, in massive sandstone ledge; bronze tablet stamped "5287"----- | 5, 285. 861 |
| Old Ilo, 2.5 miles above, off the end of prominent rocky point, 100 feet south of road, 30 feet southwest of small drain; chiseled cross in sandstone rock----- | 5, 334. 74 |
| Old Ilo, 3.7 miles above, 150 feet west of drain, 10 feet north of road, in sandstone rock; bronze tablet stamped "5408"----- | 5, 406. 961 |
| Littlejohn ranch, east line fence of, on lower end of south brace of gate post; chiseled cross----- | 5, 448. 05 |
| Littlejohn ranch, 250 feet northwest of house, at foot of brace of east gate post, on red sandstone; chiseled cross----- | 5, 512. 47 |
| Old Pitchfork ranch, 0.5 mile down creek from, corner of ranch pasture, 0.8 mile up creek from Littlejohn ranch, 10 feet south of road, in sandstone rock; bronze tablet stamped "5569"----- | 5, 567. 500 |
| Old Pitchfork ranch, 0.8 mile up creek from, beside corner post of ranch pasture, 10 feet north of road, 200 feet south of creek; chiseled hole in sandstone rock----- | 5, 630. 22 |

| | Feet. |
|---|-------------|
| Old Pitchfork ranch, 1.8 miles up creek from, opposite prominent rocky point on north side of creek, 800 feet southwest of road forks at Robbins's cabin, 700 feet west of fence corner, in sandstone at base of massive ledge; bronze tablet stamped "5760"----- | 5, 759. 189 |
| Robbins's cabin, 1 mile northeast of, at point where road passes under telephone line, 25 feet southeast of road; spike in base of telephone pole----- | 5, 725. 91 |
| Robbins's cabin, 3.6 miles northeast of, upper end of rocky canyon, 500 feet north of junction of road from Robbins's cabin and road from Pitchfork ranch, 250 feet north of drain, in sandstone boulder; bronze tablet stamped "5523"----- | 5, 522. 063 |
| Robbins's cabin, 4.3 miles northeast of, at base of rocky point where canyon begins to widen, 3 feet north of road, on sandstone boulder; chiseled cross----- | 5, 474. 44 |
| Robbins's cabin, 5.1 miles northeast of, intersection of old Cody-Thermopolis stage road and road from Pitchfork ranch to Moon's ranch, 50 feet southeast of, in sandstone rock; chiseled cross----- | 5, 533. 18 |
| Old Ho, 8 miles northwest of, on divide between Gooseberry Creek and tributary, 100 feet south of road, in sandstone ridge; aluminum tablet stamped "5580 Red Lodge"----- | 5, 587. 491 |
| From point 6 miles west of Old Ho south to Wagon Hound flat (single spur line). | |
| Old Pitchfork ranch, east line fence of pasture, 10 feet west of iron gate; end of cast-iron catch at base of bumper post----- | 5, 544. 018 |
| Old Pitchfork ranch, 2.3 miles southeast of, on low divide between Grass Creek and tributary, 70 feet south of road, on sandstone rock; chiseled cross----- | 5, 577. 816 |
| Old Pitchfork ranch, 3.4 miles southeast of, in Spring Gulch, 600 feet above road forks, 200 feet west of channel, 125 feet west of road up gulch, in base of massive sandstone exposure; bronze tablet stamped "5589"----- | 5, 588. 191 |
| Old Pitchfork ranch, 4.4 miles southeast of, on divide between Grass and Prospect creeks, 10 feet west of road, on sandstone ledge; chiseled cross----- | 5, 755. 008 |
| Old Pitchfork ranch, 5.4 miles southeast of, 600 feet west of coal exposure, 100 feet southwest of channel, 6 feet southwest of road, on sandstone rock; chiseled cross----- | 5, 508. 517 |
| Old Pitchfork ranch, 7 miles southeast of, where road enters canyon of Prospect Creek, 250 feet north of road, in sandstone boulder at base of sandstone ledge; bronze tablet stamped "5340"----- | 5, 389. 363 |
| Old Pitchfork ranch, 8.7 miles southeast of, on divide between Prospect and Cottonwood creeks, 10 feet west of road, in white sandstone ledge; chiseled cross----- | 5, 508. 345 |
| Old Pitchfork ranch, 9.1 miles southeast of, south side of divide between Prospect and Cottonwood creeks, lowest stratum of rim rock, 50 feet west of road, beside rock monument, in sandstone ledge; bronze tablet stamped "5408"----- | 5, 408. 528 |
| Wagon Hound flat, north edge of, at bend of road, bottom of grade leading up to flat, 25 feet south of road, in flat sandstone rock; chiseled cross----- | 5, 518. 499 |
| Wagon Hound flat, south bank of drain, 25 feet east of road, in red granite boulder; chiseled cross----- | 5, 432. 416 |

| | Feet. |
|--|-------------|
| Wagon Hound flat, south edge of, corner of Haines pasture, 420 feet northeast of crossroads, in sandstone; bronze tablet not stamped... | 5, 471. 886 |
| From point 7 miles southeast of Old Pitchfork ranch west and south to Wagon Hound springs (single spur line). | |
| Prospect Creek road, 4.4 miles above Grass Creek-Cottonwood road, 10 feet north of road, opposite mouth of short rocky gulch, 125 feet north of channel; cross chiseled in sandstone..... | 5, 411. 843 |
| Prospect Creek road, 2.4 miles above Grass Creek-Cottonwood Creek road, point of ridge between Prospect Creek and tributary, 250 feet north of road, 500 feet north of channel of Prospect Creek, on sandstone concretion; chiseled cross..... | 5, 492. 942 |
| Prospect Creek road, 8.3 miles above Grass Creek-Cottonwood Creek road, 1,000 feet west of point where road crosses low divide between Prospect Creek and tributary, 100 feet west of small drain, 10 feet north of road, in sandstone; bronze tablet stamped "5572"..... | 5, 570. 812 |
| Prospect Creek road, 4.4 miles above Grass Creek-Cottonwood road, point of small ridge below massive sandstone cap, 100 feet north of road, 700 feet east of drain; cross chiseled on sandstone..... | 5, 657. 598 |
| Prospect Creek road, 2,000 feet above forks of creek, west point of small ridge, 400 feet north of road up North Fork, 100 feet east of drain; hole chiseled in sandstone..... | 5, 788. 175 |
| Prospect Creek road, south fork, 1.1 miles above forks of creek, 200 feet north of section corner on rocky point, 400 feet east of channel; cross chiseled on sandstone boulder..... | 5, 851. 446 |
| Prospect Creek road, south fork, 1.8 miles above forks of creek, at foot of bluff, 300 feet east of channel, 500 feet north of side drain, 50 feet east of road, 600 feet northeast of point where road leaves valley; chiseled cross on top of large sandstone boulder..... | 5, 920. 205 |
| Prospect Creek road, up south fork, 2.5 miles above forks of creek, on divide between Prospect Creek and tributary of Cottonwood Creek, 400 feet northeast of road forks, 30 feet east of road, in sandstone ledge; bronze tablet stamped "6158"..... | 6, 152. 521 |
| Wagon Hound Springs, east gate of pasture fence, 10 feet north of road; cross chiseled on sandstone ledge..... | 5, 859. 625 |
| Wagon Hound Springs, east gate of pasture fence, 10 feet north of road, 6.9 miles by route from forks of Prospect Creek, in sandstone; bronze tablet not stamped..... | 5, 512. 584 |
| Almond, Badlands, Daniel, Francis, Granger, Green River (name not final), Lander, Leckie, Newfork, Rock Springs, South Pass, Table Mountain, and Viola quadrangles. | |

FREMONT, SWEETWATER, AND LINCOLN COUNTIES.

The elevations in the following list were determined by primary leveling forming part of an adjusted net across the State in agreement with the 1912 adjustment of precise leveling.

The leveling was done in Almond quadrangle in 1907 by C. S. Moyer; in Green River quadrangle in 1906 by H. M. Huntington, and in 1907 by Moyer; in Badlands, Daniel, Francis, Granger, Lander, South Pass, and Viola quadrangles in 1906 by Huntington; and in Leckie and Newfork quadrangles in 1905 by F. A. Nussle and in

1906 by Huntington; in Almond, Rock Springs, and Table Mountain quadrangle in 1908 by J. D. Weems.

ALMOND QUADRANGLE.

[Latitude 41° 30'–42°; longitude 108° 30'–109°.]

From T. 23 N., R. 103 W., southeast along road to Almond (Point of Rock).

| | |
|--|----------------------|
| T. 23 N., R. 102 W., SW. $\frac{1}{4}$ sec. 32, 15 feet north of road to Point of Rock; iron post stamped "7220"----- | Feet. 7, 221. 085 |
| T. 22 N., R. 102 W., SW. $\frac{1}{4}$ sec. 10, 50 feet east of junction of and between roads to Black Rock Butte and Long Canyon; iron post stamped "7132"----- | 7, 133. 127 |
| T. 22 N., R. 101 W., SW. $\frac{1}{4}$ sec. 7, 25 feet north of road toward Black Rock Butte; aluminum tablet stamped "7023"----- | 7, 024. 272 |
| T. 22 N., R. 101 W., NW. $\frac{1}{4}$ sec. 15, 1.5 miles northwest of Black Rock Butte, 100 feet south of forks of road leading north and west; aluminum tablet stamped "6908"----- | 6, 909. 590 |
| T. 22 N., R. 101 W., NE. $\frac{1}{4}$ sec. 34, 20 feet east of road leading toward Point of Rock; iron post stamped "7060"----- | 7, 061. 107 |
| T. 21 N., R. 100 W., SW. $\frac{1}{4}$ sec. 6, 10 feet east of road to Point of Rock; iron post stamped "6856"----- | 6, 857. 141 |
| T. 21 N., R. 101 W., center of E. $\frac{1}{4}$ sec. 24, 150 feet east of road to Point of Rock, on rock; aluminum tablet stamped "6738"----- | 6 738. 631 |
| T. 20 N., R. 101 W., NE. $\frac{1}{4}$ sec. 3, 25 feet east of road toward Point of Rock; iron post stamped "6627"----- | 6, 628. 152 |
| T. 20 N., R. 101 W., quarter corner south side of sec. 13, 15 feet east of road to Point of Rock; iron post stamped "6575"----- | 6, 576. 228 |
| T. 20 N., R. 101 W., SE. $\frac{1}{4}$ sec. 26, 1.5 miles southeast of Point of Rock, 3 feet north of road; iron post stamped "6542"----- | 6, 543. 162 |
| T. 20 N., R. 101 W., near center of sec. 28, 1 mile west of Point of Rock, between fourth and fifth telegraph poles west of milepost 805 $\frac{1}{2}$, 4 rails west of station whistle post and 7 rails east of small trestle at point of curvature of curve west of station, 45 feet north of track, 8 feet south of fence, in top of stone post 4 $\frac{1}{2}$ feet long, 6 inches square at top, and set 4 feet in ground; bottom of square hole, lettered "U. S. \square B. M." (C. & G. S. b. m. I 3)----- | 6, 510. 374 |

From sec. 22, T. 18 N., R. 103 W., north along road to Salt Wells.

| | |
|---|-------------|
| Salt Wells, 7.8 miles south of, 60 feet west of old road; iron post stamped "6470"----- | 6, 472. 218 |
| T. 19 N., R. 103 W., 40 feet north of road; stone land corner, marked "6447"----- | 6, 448. 86 |
| Salt Wells, 4.6 miles south of, 60 feet west of old road, west side of Salt Wells Creek Valley, 300 feet from foot of hill; iron post stamped "6430"----- | 6, 430. 974 |
| Salt Wells, 500 feet south of station; stone quarter corner; marked "6369"----- | 6, 370. 1 |

From point 0.9 mile west of Salt Wells along Union Pacific Railroad to point 3 miles east of Salt Wells.

| | |
|--|------------|
| Salt Wells, 0.9 mile west of, in line with telegraph poles on south side of tracks, 4 $\frac{1}{2}$ rails east of signal stand 7966; 1 $\frac{1}{2}$ -inch pipe marked "6377"----- | 6, 378. 28 |
|--|------------|

| | Feet. |
|--|-------------|
| Salt Wells, opposite station signboard; top of north rail of west-bound main track----- | 6, 373. 9 |
| Salt Wells, 6 feet west of signboard, south of tracks; opposite center of most westward building north of tracks; spike in telegraph pole. | 6, 372. 09 |
| Salt Wells, 0.8 mile east of, sixth telegraph pole east of first road east of Salt Wells; spike in telegraph pole----- | 6, 379. 42 |
| Salt Wells, 2 miles east of, 75 feet south of tracks, 40 feet east of seventh telegraph pole east of pole marked "794", 8 rails west of section post 141-142, about middle of first curve east of Salt Wells; 6 by 6 inch stone post, marked "U. S. \square B. M." (C. & G. S. b. m. J 3)----- | 6, 383. 375 |

From point 2 miles east of Black Buttes station west along Union Pacific Railroad to Black Buttes station, thence southwest along road to sec. 30, T. 18 N., R. 100 W.

| | |
|--|-------------|
| Black Buttes, 2 miles east of, second telegraph pole space east of half-mile post 791½, on south side of east wall of through girder bridge on Union Pacific R. R., in bridge seat wall; chiseled square; marked "U. S. \square B. M." (C. & G. S. b. m. G 3)----- | 6, 630. 210 |
| Black Buttes, 1.5 miles east of, on west abutment of Union Pacific R. R. bridge; chiseled mark----- | 6, 620. 76 |
| Black Buttes, 1 mile southwest of, southwest corner of store of Rock Springs Gibraltar Mining Co.; stake with aluminum cap, marked "6645"----- | 6, 646. 42 |
| Black Buttes, 2 miles southwest of, 25 feet east of center of road; stone set in ground, marked "6670"----- | 6, 671. 97 |
| T. 118 N., R. 100 W., sec. 30, 3 miles southwest of Black Buttes, 30 feet east of road; iron post stamped "6701"----- | 6, 702. 456 |

BADLANDS QUADRANGLE.

[Latitude 42°-42° 30'; longitude 109° 30'-110°.]

From point 2 miles southwest of Francis & Cox ranch house northwest along road to point 2 miles south of Mud Springs.

| | |
|--|-------------|
| Francis & Cox ranch house, 1.7 miles southwest of, 1,000 feet northwest of Big Sandy Creek crossing, rock in forks of road; aluminum tablet stamped "6653 RL"----- | 6, 661. 657 |
| Ten Trees, 8.4 miles southeast of, 20 feet west of road; iron post stamped "6728 RL"----- | 6, 737. 335 |
| Ten Trees, 5.1 miles southeast of, 6 feet east of road; iron post stamped "6844 RL"----- | 6, 850. 790 |
| Ten Trees, 2.2 miles southeast of, 30 feet east of road, on slight summit (witness rock at side); aluminum tablet stamped "6774 RL"----- | 6, 782. 981 |
| Ten Trees, 0.25 mile northwest of, 300 feet west by 20 feet north of road on bluff (beside rock mound); aluminum tablet stamped "6827 RL"----- | 6, 836. 220 |
| Ten Trees, 2.5 miles north of, 20 feet east of road, on divide; iron post stamped "6933 RL"----- | 6, 941. 611 |
| Ten Trees, 6 miles north of, 150 feet north of road, in sandstone ledge (marked by rock mound); aluminum tablet stamped "6832 RL"----- | 6, 940. 610 |

| | Feet. |
|---|-----------|
| Mud Springs, 5.4 miles southwest of, 20 feet east of road, on divide; iron post stamped "7080 RL"----- | 7,088.885 |
| Mud Springs, 2.5 miles south of, 20 feet east of road, on divide; iron post stamped "7160 RL"----- | 7,168.888 |

DANIEL QUADRANGLE.

[Latitude 42° 30'–43°; longitude 110°–110° 30'.]

From point 4 miles south of Big Piney post office north along road to Cora.

| | |
|--|-----------|
| Big Piney, 1.7 miles south of, 500 feet south of Fish Creek bridge, 5 feet west of fence, 30 feet east of road; iron post stamped "6801"----- | 6,800.882 |
| Big Piney, 1 mile north of, 600 feet north of south edge of bench, 2 feet east of wire fence, 30 feet west of road; iron post stamped "6868"----- | 6,867.986 |
| Big Piney, 5.1 miles north of, 30 feet west of road; iron post stamped "6856"----- | 6,855.658 |
| Big Piney, 8 miles north of, 0.5 mile northeast of old cabin and barn, 0.5 mile west of Muddy Creek, 0.5 mile south of ranch, 10 feet northwest of road, 4 feet south of rock (presumably on Uinta- Fremont county line); iron post stamped "6908"----- | 6,907.712 |
| Muddy Creek, at crossing; surface of water October 19, 1906----- | 6,910 |
| Ball, 2.6 miles south of, 2 miles north of Muddy Creek crossing, 30 feet east of road; iron post stamped "6986"----- | 6,986.087 |
| Ball post office; iron post stamped "7066"----- | 7,066.328 |
| Ball, 2.8 miles north of, 60 feet west of road, on small divide; iron post stamped "7088"----- | 7,087.847 |
| Ball, 6.4 miles north of, 1 mile south of Horse Creek divide, 20 feet west of road; iron post stamped "7269"----- | 7,269.279 |
| Daniel, 5 feet east of southeast corner of store and post-office build- ing; iron post stamped "7192"----- | 7,191.709 |
| Daniel, 3.4 miles northeast of, in forks of road; iron post stamped "7182"----- | 7,182.896 |

FRANCIS QUADRANGLE.

[Latitude 42°–42° 30'; longitude 109°–109° 30'.]

From point 9 miles north of the Well northwest along road to point 2 miles southwest of Francis & Cox ranch house.

| | |
|--|-----------|
| Francis ranch house, 9.9 miles south of, 2 miles southwest of Wash- ington ranch, 30 feet west of road, in rock; aluminum tablet stamped "6564 RL"----- | 6,573.567 |
| Francis ranch house, 6.9 miles south of, 25 feet west of road, in rock on ridge; aluminum tablet stamped "6595 RL"----- | 6,604.409 |
| Francis ranch house, 4 miles south of, 3 miles south of Billing ranch, 0.2 mile north of Little Sandy Creek crossing, 30 feet east of road, on east edge of second bench, in rock; aluminum tablet stamped "6577 RL"----- | 6,586.407 |
| Francis ranch house, 0.8 mile southeast of, at northeast corner of fence, 40 feet west of road; aluminum tablet stamped "6616 RL"--- | 6,625.095 |
| From point 7 miles southeast of Jewell lower ranch cabin by road to point 10 miles west of Jewell upper ranch. | |
| Jewell lower ranch cabin, 4 miles east of, 200 feet west of Lander Creek crossing, in forks of Lander Cut-Off and Pacific roads; alumi- num tablet stamped "7646 RL"----- | 7,654.235 |

| | Feet. |
|---|-----------|
| Jewell lower ranch cabin, 0.5 mile southeast of, in granite rock, 15 feet north of road, marked by rock mound; aluminum tablet stamped "7890 RL"----- | 7,897.804 |

GRANGER QUADRANGLE.

[Latitude 41° 30'-42°; longitude 109° 30'-110°.]

From Green River along road up Green River to Case ranch and ferry.

| | |
|---|-----------|
| Green River, 3.8 miles northwest of, 60 feet southwest of high-water road at top of hill east of river; in sand rock on narrow ridge; aluminum tablet----- | 6,302.078 |
| Green River, third crossing west of; surface of water in Green River September 28, 1906----- | 6,101. |
| Green River, 6.9 miles northwest of, 500 feet west of third crossing of river, 100 feet southwest of low-water road, in sandstone 4 by 4 by 6 feet, rock mound on top; aluminum tablet----- | 6,123.974 |
| Green River, 9.1 miles northwest of, west of river, 0.2 mile south of ranch house, 40 feet south of road; iron post----- | 6,142.258 |
| Green River, 11.6 miles northwest of, west of river, 30 feet south of road; iron post----- | 6,174.842 |
| Green River, at fourth crossing; surface of water September 27, 1906----- | 6,140 |
| Green River, 14.3 miles northwest of, east of river, 150 feet east of fifth crossing of river, 150 feet northeast of road, on second bench; iron post----- | 6,165.937 |
| Green River, at fifth crossing; surface of water----- | 6,146 |
| Green River, 17.3 miles northwest of, west of river, 150 feet east of where road leaves third bench and descends, 150 feet north of road; iron post----- | 6,248.862 |
| Green River, 20.4 miles northwest of, 100 feet west of river, 25 feet west of road; iron post----- | 6,209.470 |
| Green River, 25.3 miles northwest of, west of river, opposite mouth of draw, 30 feet south of road; iron post----- | 6,241.997 |
| Green River, 28.1 miles northwest of, 3 miles below mouth of Sandy Creek, 400 feet west of river, 75 feet west of road; iron post----- | 6,256.776 |
| Green River, 30.6 miles northwest of, 0.25 mile south of Lombard ferry, 1,000 feet south of ford, in forks of old road, on north edge of second bench; iron post----- | 6,268.062 |
| Green River, 33.7 miles northwest of, 0.8 mile west of Lombard Ferry ranch, 25 feet north of road, on second bench; iron post----- | 6,297.627 |
| Green River, 36.8 miles northwest of, west of river, 0.5 mile west of road forks, 20 feet south of lower river road, on second bench; iron post----- | 6,323.011 |
| Green River, 40.3 miles northwest of, east of river, 8 miles north of Lombard ferry, 20 feet south of road, on sand hill; iron post----- | 6,360.638 |
| Green River, 44 miles northwest of, 3 miles east of Slate Creek, 2.5 miles northwest of dipping pens, 0.5 mile north of road, 600 feet south of river bank, on north edge of second bench; iron post----- | 6,382.416 |
| Green River, 46.5 miles northwest of, 2 miles southeast of Case ferry and ranch, 1,000 feet north of river, 30 feet east of road, on second bench; iron post----- | 6,396.187 |
| Case ranch and ferry, at southwest corner of porch of house; iron post----- | 6,393.785 |
| Green River, at Case ferry; surface of water October 6, 1906----- | 6,386 |

GREEN RIVER 36' QUADRANGLE (includes Pilot Butte, Rock Springs, and Table Mountain 15' quadrangles.)

[Latitude 41° 30'–42°; longitude 109°–109° 30']

From Rock Springs along Union Pacific Railroad to Green River.

| | Feet. |
|--|-------------|
| Rock Springs, on north side of station, in water table 22 inches above surface of ground, 22 inches from northwest corner of bay window; square cut and lettered "U.S.□B.M." (C. & G. S. L 3)----- | 6, 265. 718 |
| Rock Springs, in west end of Union Pacific R. R. park, west of station, 12 feet from west fence, in line with three hydrants in park, in top of stone post 4.5 feet long, top 6 by 6 inches set 4 feet in ground; bottom of square hole, lettered "U.S.□B.M." (C. & G. S. M 3)---- | 6, 262. 931 |
| Rock Springs, in stone wall of city hall, 6 inches from pillar at north side of west entrance, 4 feet above ground; copper bolt stamped "U.S.⊕B.M." (C. & G. S. N 3)----- | 6, 277. 136 |
| Rock Springs, in stone wall of high school building, north side, 40 feet west of northeast corner, 6 feet west of north entrance, 6 feet above ground, 16 inches above and to left of first window west of north entrance; copper bolt stamped "U.S.⊕B.M." (C. & G. S. O 3)----- | 6, 289. 410 |
| Wilkins, 1.8 miles east of, 15 rails east of east side of pump house, 45 feet south of center of track, in line with telegraph poles; bottom of square hole in top of stone post lettered "U.S.□B.M." (C. & G. S. P 3)----- | 6, 202. 476 |
| Green River, west end of Union Pacific R. R. park, 12 feet from fence, equidistant from north and south sides; bottom of square hole in top of stone post, lettered "U.S.□B.M." (C. & G. S. Q 3)--- | 6, 087. 609 |
| Green River, in sandstone water table of county courthouse, 4 feet north of southeast corner, 4 feet above ground; copper bolt stamped "U.S.⊕B.M." (C. & G. S. R 3)----- | 6, 119. 518 |
| Green River, in west wall of Sweetwater Brewing Co.'s stone office and saloon, 16 inches from southwest corner, 4 feet above ground; copper bolt stamped "U.S.⊕B.M." (C. & G. S. S 3)----- | 6, 098. 587 |
| Green River, south end of middle red sandstone pier of Union Pacific R. R. bridge; bottom of square hole, lettered "U.S.□B.M." (C. & G. S. T 3)----- | 6, 088. 233 |

From Rock Springs north along road to point 9 miles north of the Well.

| | |
|--|-------------|
| Rock Springs, 1.6 miles north of, 30 feet east of road, in wall of stone house; aluminum tablet stamped "6268 RL"----- | 6, 277. 584 |
| Rock Springs, 4.3 miles north of, 200 feet southeast of forks of road, 0.25 mile north of Killpecker Creek, 20 feet east of road; iron post stamped "6353 RL"----- | 6, 362. 828 |
| Fourteen Mile ranch, 6.3 miles south of, 15 feet east of road; iron post stamped "6543 RL"----- | 6, 552. 717 |
| Fourteen Mile ranch, 3.2 miles south of, 20 feet east of road; iron post stamped "6513 RL"----- | 6, 522. 321 |
| Fourteen Mile ranch or P. F. Dorrence ranch, also known as Grange Springs, north side of rock house, 6 feet east of kitchen door; aluminum tablet stamped "6661 RL"----- | 6, 670. 434 |
| The Well, 10.4 miles south of, 20 feet west of road; iron post stamped "7156 RL"----- | 7, 165. 309 |
| The Well, 6.6 miles south of, 50 feet west of road; iron post stamped "6099 RL"----- | 7, 008. 437 |

| | Feet. |
|--|-----------|
| The Well, 3.1 miles south of, 20 feet east of road: iron post stamped "6022 RL"----- | 6,981.074 |
| The Well, at southwest corner of Zambin house: iron post stamped "6092 RL"----- | 7,000.982 |
| The Well, 2.4 miles north of, 20 feet east of road: iron post stamped "6074 RL"----- | 6,983.169 |
| The Well, 5.3 miles north of, in road forks: iron post stamped "6700 RL"----- | 6,769.516 |
| From point 4.3 miles north of Rock Springs northeast along road into T. 23 N., R. 106 W. | |

| | |
|---|-----------|
| T. 20 N., R. 105 W., near south line of, 6.9 miles north of Rock Springs, 15 feet west of road, 1 foot north of forks; iron post stamped "6360"----- | 6,360.496 |
| T. 20 N., R. 105 W., near center of, 9.5 miles north of Rock Springs, 35 feet west of road on east side of Killpecker Creek; top of iron post stamped "6383"----- | 6,384.314 |
| T. 20 N., R. 105 W., about southeast corner of sec. 36, 12.5 miles north of Rock Springs, 30 feet west of road on east side of Killpecker Creek; top of iron post stamped "6423"----- | 6,429.270 |
| T. 21 N., R. 105 W., southeast corner of sec. 25, 13.5 miles north of Rock Springs, 15 feet west of road east of Killpecker Creek, at forks of road leading east and west to Long Canyon; aluminum tablet stamped "6454"----- | 6,455.513 |
| T. 21 N., R. 104 W., NE. $\frac{1}{4}$ sec. 17, 17.5 miles north of Rock Springs, 80 feet east of road east of Killpecker Creek; aluminum tablet stamped "6522"----- | 6,523.382 |
| T. 22 N., R. 104 W., SW. $\frac{1}{4}$ sec. 34, 20.5 miles north of Rock Springs, 25 feet west of road on east side of Killpecker Creek; iron post stamped "6622"----- | 6,623.192 |
| T. 22 N., R. 104 W., NE. $\frac{1}{4}$ sec. 23, 7 feet west of road on east side of Killpecker Creek; iron post stamped "6721"----- | 6,722.256 |
| T. 22 N., R. 104 W., near southwest corner of sec. 1, 5 feet west of road on east side of Killpecker Creek; iron post stamped "6765"----- | 6,766.223 |
| T. 23 N., R. 103 W., NW. $\frac{1}{4}$ sec. 30, 5 feet north of road on east side of Killpecker Creek; iron post stamped "6817"----- | 6,818.222 |
| T. 23 N., R. 103 W., NW. $\frac{1}{4}$ sec. 21, northeast cornerstone of Joe Cookston's ranch house, 25 feet east of road, east of road through Nicht Gulch; aluminum tablet stamped "6988"----- | 6,989.150 |
| T. 23 N., R. 103 W., north part of SE. $\frac{1}{4}$ sec. 28, 15 feet east of road leading toward North Table Mountain; iron post stamped "7134"----- | 7,135.183 |

LANDER QUADRANGLE.

[Latitude 42° 30'-43°; longitude 108° 30'-109°.]

From Shoshone Agency along road through Lander to Atlantic City.

| | |
|--|-----------|
| Shoshone Agency, in northeast corner of stone warehouse; aluminum tablet stamped "5583 RL"----- | 5,590.870 |
| Shoshone Agency, 3.2 miles southeast of, 30 feet west of road, 3 feet north of telephone pole; iron post stamped "5550"----- | 5,557.584 |
| Shoshone Agency, 6 miles southeast of, 50 feet west of road, on summit of road at divide between Wind River and north fork of Popo Agle River, at foot of telephone pole; iron post stamped "5782 RL"----- | 5,740.042 |

| | Feet. |
|--|-------------|
| Shoshone Agency, 9.5 miles southeast of, 200 feet west of road, 1,000 feet north of bridge over North Fork of Popo Agie River, on second bench, in top of 18 by 18 by 15 inch limestone rock; aluminum tablet stamped "5506 RL"----- | 5, 518. 292 |
| North Fork of Popo Agie River, at bridge; surface of water----- | 5, 478 |
| Lander, 2 miles northwest of, in southwest corner of Burch stone house; aluminum tablet stamped "5458 RL"----- | 5, 465. 84 |
| Lander, in northeast corner of brick school building; aluminum tablet stamped "5353 RL"----- | 5, 360. 506 |
| Lander, in northwest corner of Fremont Hotel; aluminum tablet stamped "6345 RL"----- | 5, 352. 507 |
| Pleasant Valley district school No. 3, south of road, 700 feet east of Dutch Flat Creek; iron post stamped "5335 RL"----- | 5, 343. 323 |
| Pleasant Valley district school No. 3, 2.7 miles southeast of, 100 feet east of road, on ridge, in rock; aluminum tablet stamped "5469 RL"----- | 5, 476. 983 |
| Reids schoolhouse, 0.5 mile southwest of, in corner stone; aluminum tablet stamped "5464 RL"----- | 5, 472. 330 |
| Clark's ranch 600 feet north of, at mail post, 20 feet south of road; iron post stamped "5513 RL"----- | 5, 520. 663 |
| Clark's ranch, 2.2 miles south of, 0.2 mile south of Little Popo Agie River, 15 feet east of road, in large rock; aluminum tablet stamped "5629 RL"----- | 5, 637. 024 |
| David Tweed's house, 150 feet east of, 150 feet west of road, 75 feet east of ditch, 8 feet north of private road, in sandstone rock; aluminum tablet stamped "5782 RL"----- | 5, 789. 897 |
| William Tweed's house, 300 feet east of, 10 feet west of road at mail box; iron post stamped "6285 RL"----- | 6, 272. 802 |
| William Tweed's house, 2.4 miles southwest of, on divide between Red Canyon Creek and Twin Creek, 10 feet south of road, in granite ledge; aluminum tablet stamped "7271 RL"----- | 7, 278. 762 |
| William Tweed's house, 6 miles southwest of, 250 feet northeast of crossing of Twin Creek, 1,000 feet north of divide between Twin and Beaver creeks, 200 feet east of east boundary Yellowstone Forest Reserve, 20 feet north of road; aluminum tablet stamped "8021 RL"----- | 8, 029. 346 |
| Mary Jane mine, (P. J. O'Mera), 50 feet south of shaft and engine house, quarter corner sec. 19, T. 30 N., R. 99 W., east boundary Yellowstone Forest Reserve, in rock; aluminum tablet stamped "7861 RL"----- | 7, 868. 884 |
| Atlantic City, 3.3 miles north of, 300 feet northwest of cabin on hill, 40 feet east of timber, 40 feet west of road, in rock; aluminum tablet stamped "8222 RL"----- | 8, 230. 859 |
| Atlantic City, 10 feet south by 10 feet west of post-office door, at porch; iron post stamped "7675 RL"----- | 7, 683. 083 |

LECKIE QUADRANGLE.

[Latitude 42° 30'—43°; longitude 109°—109° 30'.]

From point 2.3 miles southeast of Olson, southeast along road to point 1 mile southwest of Jewell upper ranch.

| | |
|---|-------------|
| Olson, 6.9 miles south of, at intersection of road from Bowlder ranch, 300 feet south of Muddy Creek, 5 feet west of mail box; iron post stamped "7208 RDLG"----- | 7, 216. 768 |
|---|-------------|

| | Feet. |
|--|-------------|
| Olson, 9.3 miles south of, 250 feet west of Moss Johnson's pasture fence corner, at turn east in road, 230 feet west of road, in large granite ledge; aluminum tablet stamped "7286 RDLG"----- | 7, 294. 002 |
| Olson, 11.6 miles south of, on ridge 1 mile southwest of house, 2.5 miles north of Sandy Creek, 35 feet west of road; iron post stamped "7265 RDLG"----- | 7, 273. 073 |
| Leckie, 5.3 miles north of, 300 feet east of Sandy Creek, 250 feet southwest of D. N. Clark's house, 50 feet east of road, at quarter section corner; iron post stamped "7180 RDLG"----- | 7, 194. 763 |
| Leckie, 3.3 miles northwest of, on top of hill, 50 feet west of road, in granite rock; aluminum tablet stamped "7678 RDLG"----- | 7, 686. 628 |
| Leckie, at southeast corner of post office and store building, 15 feet south of door; iron post stamped "7828 RDLG"----- | 7, 836. 143 |
| Leckie, 2.5 miles east of, 15 feet south of summit of road; iron post stamped "8121 RL"----- | 8, 128. 644 |
| Leckie, 5.1 miles east of, 500 feet east of Little Sandy Creek, south of road on Continental Divide, in group of granite rocks; aluminum tablet stamped "8019 RL"----- | 8, 026. 640 |
| Jewell upper ranch, 3.5 miles west of, 1,000 feet southwest of Lander Creek, 40 feet southwest of road, in granite rock; aluminum tablet stamped "7971 RL"----- | 7, 979. 467 |
| Jewell upper ranch, 0.8 mile southwest of, 200 feet north of road, in granite ledge; aluminum tablet stamped "7889 RL"----- | 7, 897. 060 |

NEWFORK QUADRANGLE.

[Latitude 42° 30'-43°; longitude 109° 30'-110°.]

From point 2 miles south of Mudd Springs to Cora and point 3.3 miles southwest of Cora.

| | |
|--|-------------|
| Newfork, 13.8 miles southeast of, 1 mile north of Mud Springs draw, in road forks; iron post stamped "7241 RL"----- | 7, 250. 094 |
| Newfork, 10.5 miles southeast of, on divide between Newfork and Big Sand creeks, 10 feet west of road south, 0.5 mile south of forks of road; iron post stamped "7373 RL"----- | 7, 382. 123 |
| Newfork, 9.5 miles southeast of, 20 feet east of road, 700 feet west of Sand Creek, 800 feet west of peculiar-colored clay banks; iron post stamped "7219 RL"----- | 7, 227. 981 |
| Newfork, 0.8 miles southeast of, in fork of road and old Lander trail; iron post stamped "7124 RL"----- | 7, 132. 179 |
| Newfork, 3.9 miles southeast of, 800 feet southeast of draw, 100 feet south of road on knoll; iron post stamped "7094 RL"----- | 7, 102. 502 |
| Newfork, northeast corner of J. Vible's store, in top of granite boulder 4 inches out of ground; aluminum tablet stamped "6921 RDLG"----- | 6, 929. 185 |
| Bowlder, in front of post office and S. L. Spicer's store, 3 feet west of east door; iron post stamped "7009 RDLG"----- | 7, 017. 933 |
| Bowlder, 3 miles north of, 20 feet west of road at fence, 1,800 feet south of forks of road, in granite bowlder; aluminum tablet stamped "7008 RDLG"----- | 7, 016. 251 |
| Pinedale, 7 miles south of, 30 feet east of gate at fence corner, in granite bowlder; aluminum tablet stamped "7058 RL"----- | 7, 066. 873 |

| | Feet. |
|--|-------------|
| Pinedale, 4.5 miles south of, 150 feet south of forks of road, 400 feet east of road, in granite ledge; aluminum tablet stamped "7171 RL"----- | 7, 180. 040 |
| Pinedale, 2.5 miles southeast of, in forks of road, in granite boulder; aluminum tablet stamped "7180 RL"----- | 7, 198. 924 |
| Pinedale, in front of "The Pinedale Roundup" post office and newspaper office; iron post stamped "7167 RL"----- | 7, 175. 381 |
| Cora, 5 miles south of, at fence corner, 5 feet west of road, in granite boulder; aluminum tablet stamped "7200 RL"----- | 7, 208. 954 |
| Cora, 2.8 miles south of, southwest corner of Miller's house, 100 feet east of road, in granite rock; aluminum tablet stamped "7231 RL"----- | 7, 239. 870 |
| Cora, 1 foot out from gallery in front of J. H. Bemis's store and post office; iron post stamped "7299 RL"----- | 7, 307. 314 |
| Cora, 3.3 miles southwest of, 0.2 mile north of divide, 30 feet north of road, on ridge; iron post stamped "7465"----- | 7, 465. 271 |

From Newfork east along road to point 2.2 miles southeast of Olson.

| | |
|--|-------------|
| Newfork, 3.2 miles southeast of, on summit, in granite rock 14 inches out of ground; aluminum tablet stamped "7259 RDLG"----- | 7, 267. 698 |
| Newfork, 7.2 miles southeast of, 800 feet north of creek, 75 feet southwest of Doc Gilligan's house, 20 feet south of road, in ledge of granite rock; aluminum tablet stamped "7075 RDLG"----- | 7, 063. 401 |
| Olson, 1 mile southwest of, at gate 200 feet northeast of Barney Tibble's house; iron post stamped "7135 RDLG"----- | 7, 143. 255 |
| Olson, 2.2 miles south of, 60 feet southeast of east fork bridge, 2 feet west of fence corner, 25 feet east of road; iron post stamped "7165 RDLG"----- | 7, 173. 135 |

ROCK SPRINGS QUADRANGLE.

[Latitude 41° 30'—41° 45'; longitude 109°—109° 15'.]

From Baxter north along road to sec. 14, T. 20 N., R. 104 W., thence northeast to sec. 7, T. 20 N., R. 103 W., thence southeast to Union Pacific Railroad and east to Salt Wells.

| | |
|--|-------------|
| T. 13 N., R. 104 W., quarter corner between secs. 13 and 14; iron post marked "6306"----- | 6, 306. 740 |
| Baxter, 1.8 miles north of, at corner of secs. 10, 11, 14, and 15, T. 19 N., R. 104 W.; standard land-corner post marked "6373"----- | 6, 374. 387 |
| Baxter, 2.6 miles north of, at quarter corner between secs. 10 and 11, T. 19 N., R. 104 W.; standard land-corner post marked "6423"----- | 6, 424. 687 |
| Baxter, 4 miles north of, at quarter corner between secs. 15 and 22, T. 20 N., R. 104 W.; standard land-corner post marked "6368"----- | 6, 368. 632 |
| Baxter, 5.1 miles north of, at corner of secs. 25, 26, 35, and 36, T. 20 N., R. 104 W.; standard land-corner post marked "6402"----- | 6, 403. 235 |
| Baxter, 5.6 miles north of, at quarter corner between secs. 25 and 26, T. 20 N., R. 104 W.; standard land-corner post marked "6416"----- | 6, 417. 377 |
| Baxter, 6.1 miles north of, at corner of secs. 23, 24, 25, and 26, T. 20 N., R. 104 W.; standard land-corner post marked "6420"----- | 6, 420. 987 |
| Baxter, 7.2 miles north of, at quarter corner between secs. 13 and 14, T. 20 N., R. 104 W.; standard land-corner post marked "6437"----- | 6, 438. 421 |
| T. 20 N., R. 103 W., east side of sec. 7, 9.2 miles north of Baxter, 80 feet east of road, at point of hill; iron post stamped "6543"----- | 6, 543. 934 |

| | Feet. |
|--|-----------|
| T. 20 N., R. 103 W., sec. 28, 12 miles from Baxter, 400 feet from and opposite to point of hill running north-south, 3.5 miles straight up canyon which intersects Union Pacific R. R. track, 1 mile west of Salt Wells station; iron post stamped "6386"----- | 6,387.312 |
| T. 19 N., R. 103 W., quarter corner of secs. 3 and 4, in center of large bare space opposite shallow draw to east; quarter corner stone----- | 6,352.20 |
| Salt Wells, 1.5 miles west of, 200 feet north of track, in line with signal stands 7970 and 7971, 6 rails west of signboard "Salt Wells 1 mile"; iron post stamped "6374"----- | 6,375.128 |
| From point near Rock Springs to Rock Springs, thence southeast along highway to sec. 31, T. 18 N., R. 103 W., thence to sec. 23 of same township. | |
| Rock Springs, 2 miles west of, in line with telegraph poles, on south side of tracks, 33 feet west of pole marked "812"; top of 1½-inch pipe----- | 6,225.64 |
| Rock Springs, 1 mile west of, in line with telegraph poles, on south side of tracks, 30 feet west of pole marked "811"; top of 1½-inch pipe----- | 6,234.90 |
| Rock Springs, in west end of Union Pacific R. R. station park, 12 feet from fence, in line with 3 hydrants, in top of 6 by 6 inch stone post set 4 feet in ground; bottom of square hole, lettered "B. M." (C. & G. S. b. m. M 8)----- | 6,262.981 |
| Rock Springs, 0.5 mile from city hall, 20 feet north of road, opposite west fence of green house, T. 19 N., R. 105 W.; standard land-corner post marked "6297"----- | 6,298.490 |
| Rock Springs, 1 mile south of, south of road, in bottom of pole under signboard; bolt marked "6346"----- | 6,347.76 |
| Rock Springs, 1.8 miles southeast of, 70 feet south of road, at west end of rock-pointed hill, on top of flat rock 2 feet high; chiseled square marked "6442"----- | 6,443.28 |
| Rock Springs, 3 miles southeast of, at foot of north side of valley, 250 feet north of road at point where latter runs over point of sharp hill, in rock; tablet stamped "6567"----- | 6,568.221 |
| Rock Springs, 6.2 miles southeast of, 80 feet north of road, on summit of ridge, near foot of hill where road drops into Baxter Basin, opposite point of hill south of road; iron post stamped "6678"----- | 6,679.151 |
| Rock Springs, 9 miles southeast of, 100 feet north of road on top of ridge, north of and nearly opposite point of mountain to south; iron post stamped "6608"----- | 6,609.492 |
| T. 18 N., R. 103 W., NW. ¼ SW. ¼ sec. 27, 400 feet west of old road, approximately 1 mile north of point where Mud Springs road crosses rim of basin, on west side of canyon; iron post stamped "6699"----- | 6,700.615 |

SOUTH PASS QUADRANGLE.

[Latitude 42°-42° 30'; longitude 108° 30'-109°.]

From Atlantic City southwest along road to Sweetwater River, thence northwest to point 7 miles southeast of Jewell lower ranch cabin.

| | |
|--|-----------|
| Atlantic City, 2.3 miles southwest of, on divide between Rocky and Willow creeks, 100 feet south of road; aluminum tablet stamped "8162 RL"----- | 8,170.408 |
|--|-----------|

| | Feet. |
|--|-------------|
| South Pass, 10 feet south by 15 feet west of post-office door, at porch; iron post stamped "7796 RL"----- | 7, 803. 865 |
| South Pass, 2.9 miles southwest of, west end of rocky spur, 30 feet east of road, in granite rock; aluminum tablet stamped "7850 RL"----- | 7, 858. 221 |
| South Pass, 5.5 miles southwest of, on divide between Fish Creek and Sweetwater River, 10 feet west of road marked by rock mound; iron post stamped "7824 RL"----- | 7, 831. 963 |
| Sweetwater River; bridge floor----- | 7, 445. |
| Sweetwater River bridge, 0.8 mile south of, at forks of road on top of first hill; iron post stamped "7569 RL"----- | 7, 576. 828 |
| Jewell lower ranch cabin, 8.5 miles east of, 3.5 miles west of Sweetwater bridge, 10 feet north of road on Continental Divide; iron post stamped "7635 RL"----- | 7, 642. 883 |

TABLE MOUNTAIN QUADRANGLE.

[Latitude 41° 30'–41° 45'; longitude 109° 15'–109° 30'.]

From sec. 4, T. 17 N., R. 105 W., north to point near Union Pacific Railroad
3 miles west of Rock Springs.

| | |
|---|-------------|
| Miller's Canyon, 4 miles northwest of, north side of valley, 600 feet west of point where creek leaves foot of ridge and turns toward road and on line with center of draw through which road runs after leaving creek valley; bottom of chiseled square on rock, painted "U.S.□B.M. 6393"----- | 6, 894. 81 |
| T. 18 N., R. 105 W., sec. 33, 4.8 miles northwest of Miller's Canyon, at foot of hill, 2 feet above ground, on east side of valley, 1 mile west of point where road leaves Little Bitter Creek valley, in top of flat rock; tablet stamped "6365"----- | 6, 866. 224 |
| Miller's Canyon, 6.1 miles northwest of, at foot of rocky hill on west side of small break in side of valley; chiseled square on flat rock, marked "U.S.□B.M. 6343"----- | 6, 844. 82 |
| Union Pacific R. R., 2 miles south of, up Little Bitter Creek valley, at foot of hill east side of valley, 200 feet north of break in hill-side, opposite shallow canyon on west side of valley; chiseled square on boulder, marked "6307 U.S.□B.M."----- | 6, 808. 41 |
| T. 18 N., R. 105 W., sec. 9, 1 mile above Union Pacific R. R. and Little Bitter Creek, in solid rock which forms point of rocky hill on east side of valley, at point where valley begins to narrow; tablet stamped "6280"----- | 6, 281. 191 |
| Rock Springs, 3 miles west of, on east side of Little Bitter Creek valley, forming point of second small hill about 0.5 mile above Union Pacific R. R. tracks, on high point of boulder; bottom of chiseled square, marked "6245 U.S.□B.M."----- | 6, 246. 58 |

VIOLA QUADRANGLE.

[Latitude 42°–42° 30'; longitude 110°–110° 30'.]

From Case ferry along road up Green River to point 4 miles south of Big Piney.

| | |
|--|-------------|
| Case ferry, 8.2 miles north of, 0.5 mile south of Steps ranch, 200 feet west of fence, 300 feet east of road forks, 75 feet north of hill, 50 feet northeast of road; iron post----- | 6, 476. 454 |
| Case ferry, 6.6 miles north of, at southeast corner of bunk house on Daniel O'Rherson's ranch; iron post stamped "6459"----- | 6, 459. 634 |

| | Feet. |
|--|-------------|
| Denver's ranch house, 0.8 mile southwest of, 200 feet west of gate to same, 75 feet south of fence, 200 feet east of rocky cliff, at mouth of draw; iron post----- | 6, 530. 578 |
| Green River, at crossing below Anderson Island; surface of water October 9, 1906----- | 6, 471 |
| Green River, above Anderson Island; surface of water October 10, 1906----- | 6, 489 |
| Walter's ranch, 1 mile northwest of, 1,000 feet west of head gate to Walter's ditch, 100 feet west of ford, in forks of road; iron post-- | 6, 495. 440 |
| Green River, above Nelson's; surface of water October 10, 1906----- | 6, 503 |
| Green River, at Names Hill crossing; surface of water October 11, 1906----- | 6, 508 |
| Names Hill crossing of Green River, 0.5 mile north of, 200 feet west of Delaney's gate, 50 feet east of rock cliff, 600 feet west of river, 800 feet north of forks of road; aluminum tablet stamped "6528"----- | 6, 528. 792 |
| Stead ranch house, 0.8 mile west of, 10 feet east of gate, 10 feet south of south gate to Spur Ranch, at end of public road; iron post stamped "6604"----- | 6, 604. 121 |
| Spur ranch house, 2 miles north of, 300 feet west of river, 50 feet west of road; iron post stamped "6584"----- | 6, 584. 582 |
| Charles Bird's ranch house, 1.2 miles south of, in fork of Kemmerer stage road and River road; iron post stamped "6635"----- | 6, 635. 402 |
| Midway, 2.4 miles south of, 500 feet southeast of angle in fence and telephone line, 200 feet east of fence; aluminum tablet stamped "6707" (marked by rock mound)----- | 6, 707. 137 |
| Midway (McGinnis ranch), 3 feet west of southwest corner of house; iron post stamped "6652"----- | 6, 652. 633 |
| Midway, 3.1 miles north of, 30 feet east of road, 100 feet north of small draw, 20 feet north of old crossroads; iron post stamped "6722"----- | 6, 722. 296 |
| Midway, 6.2 miles north of, 2 miles north of Dry Piney Creek, 30 feet west of road; iron post stamped "6753"----- | 6, 757. 886 |
| Midway, 9.2 miles north of, 20 feet south of ditch, 100 feet northeast of ditch crossing, 50 feet north of road; iron post stamped "6771"----- | 6, 771. 347 |
| Aspen Mountains, Maxon, South Bitter Creek, Bridger, Cokeville, Evanston, Montpelier, Randolph, Saleratus Pass, and Twin Buttes quadrangles. | |

SWEETWATER, LINCOLN, AND UINTA COUNTIES.

Most of the elevations in the following list are based upon a bronze tablet stamped "6752 Evan" in south side of courthouse yard at Evanston, the elevation of which is now accepted as 6,753.966 feet above mean sea level. The elevations in the Cokeville, Montpelier, Randolph, and Saleratus Pass quadrangles are part of the levels run in 1909 in Idaho, Utah, and Wyoming and are based on bench mark "J" of the Coast and Geodetic Survey near Onyx, Bannock County, Idaho. From Onyx the line was run over the Oregon Short Line R. R. to a point 3.5 miles south of Montpelier, thence south along road through Laketown and Randolph, Utah, to Evanston, Wyo., closing on the Coast and Geodetic Survey bench mark at that point.

The leveling was done in Cokeville, Montpelier, and Randolph quadrangles in 1909 by L. F. Biggs; in Bridger quadrangle in 1897-98 by E. W. Hills, and in 1905 by J. H. Kent; in Evanston quadrangle in 1897-98 by Hills, and in 1901-2 by E. W. Glafcke; in Aspen Mountains and Twin Buttes quadrangles in 1905 by J. H. Kent; and in Saleratus Pass quadrangle in 1898 by Hills, and in 1909 by Biggs.

For additional elevations in Randolph and Saleratus Pass quadrangles, Utah, and Montpelier quadrangle, Idaho, see Bulletins 566 and 567, respectively.

Leveling was also done in Aspen Mountains, Maxon, and South Bitter Creek quadrangles in 1908 by J. D. Weems, of the Fuel Section of the Geologic Branch.

ASPEN MOUNTAINS QUADRANGLE.

[Latitude 41° 15'-41° 30'; longitude 109°-109° 15'.]

Part of line from Lonetree to Bridgeport.

(For other parts see Twin Buttes quadrangle, Wyo., and Marsh Peak and Browns Park quadrangles, Utah.)

| | |
|---|-------------|
| Green River, 2 miles east of, where spur comes close to road, 20 feet south of trail, in canyon; iron post stamped "6027"----- | 6, 026. 625 |
| Driscolls Gap, 3 miles west of, 25 feet south of trail, on white Carmen Flat; iron post stamped "6275"----- | 6, 274. 343 |
| Spring Creek and Driscolls Gap, near, at point of spur, 30 feet north of road; iron post stamped "6379"----- | 6, 377. 407 |
| Head of Spring Creek Canyon, near, 3 miles east of Driscolls Gap, 20 feet north of road; iron post stamped "6589"----- | 6, 588. 460 |
| Gablins Spring, 2 miles west of, 20 feet north of road, on summit, 1 mile west of canyon, near pile of stones; in stone tablet marked "7113"----- | 7, 112. 735 |
| Goslins Spring, near, 20 feet south of road, in stone near large pile of stones; tablet stamped "6705"----- | 6, 704. 684 |
| Red Creek, 1 mile from, 4 miles west of Ewings Canyon, on the second point from Red Creek, 20 feet north of trail; iron post stamped "6323"----- | 6, 323. 177 |
| Jessie Ewing Canyon, at head of, 20 feet south of road, in stone near pile of stones; tablet stamped "6991"----- | 6, 990. 809 |

ASPEN MOUNTAINS 15' QUADRANGLE (Maxon 30' quadrangle).

From sec. 23, T. 16 N., R. 103 W., southwest along road to sec. 19, T. 15 N., R. 114 W., thence northwest to sec. 27, T. 17 N., R. 105 W.

| | |
|---|-------------|
| T. 16 N., R. 103 W., NW. $\frac{1}{4}$ sec. 28, 3 miles west of intersection of Prettywater Creek and stage road, 30 feet east of road; iron post stamped "6899"----- | 6, 900. 415 |
| Cooper's ranch, 2.1 miles southwest of, SW. $\frac{1}{4}$ sec. 25, T. 16 N., R. 104 W., 30 feet north of center of road; iron post stamped "7128"----- | 7, 129. 383 |
| Brook's ranch, 0.3 mile northwest of, 1 foot above ground, on northeast corner of abandoned stone house; iron pin painted white and marked "U.S.B.M. 7248"----- | 7, 248. 95 |

| | Feet. |
|---|-------------|
| T. 15 N., R. 104 W., SW. $\frac{1}{4}$ sec. 3, 60 feet east of road, at head of north fork of Prettywater Valley, opposite and 0.8 mile from Brook's ranch; iron post stamped "7561"----- | 7, 562. 373 |
| Brook's lower ranch, 3 miles south of, sec. 21, T. 15 N., R. 104 W., 60 feet east of road, at point where road to Brook's upper ranch turns off to right; iron post stamped "7767"----- | 7, 767. 600 |
| Menkiney's ranch, 2 miles northeast of, sec. 19, T. 15 N., R. 104 W., 0.3 mile above point where creek turns into narrow canyon, 40 feet from creek bank, on west side; chisel mark on boulder, marked "U.S.□B.M. 7236"----- | 7, 237. 00 |
| Menkiney's ranch, 0.7 mile southeast of, 150 feet west of fence, 80 feet west of creek; chisel mark on boulder, marked with white paint "U.S.□B.M. 7115"----- | 7, 115. 94 |
| T. 15 N., R. 105 W., sec. 13, 82 feet from corner of house and 21 feet from corner of corral fence at Menkiney's ranch, 10 feet from center of road, in boulder; tablet stamped "7061"----- | 7, 062. 304 |
| Menkiney's ranch, 1.5 miles northwest of, 20 feet west of road, at point of hill where creek and road come near together; chisel mark on boulder, marked with white paint "U.S.□B.M."----- | 6, 974. 45 |
| T. 15 N., R. 105 W., sec. 3, 2.5 miles northwest of Menkiney's ranch, at bottom and at point of sharp hill, 125 feet above road, 300 feet west of point where fence would cross road if extended, in rock; tablet stamped "6915"----- | 6, 915. 931 |
| Menkiney's ranch, 3.5 miles northwest of, at foot of hill, at east end of place where road runs down near creek bottom, 40 feet southwest of road, on rock ledge formed by large boulder; chisel mark on boulder, marked "U.S.□B.M. 6846"----- | 6, 847. 22 |
| Menkiney's ranch, 4.6 miles northwest of, at point of hill, 50 feet west of road; chisel mark on small boulder, marked "U.S.□B.M. 6782"----- | 6, 782. 98 |
| T. 16 N., R. 105 W., sec. 28, 5.5 miles northwest of Menkiney's ranch, 140 feet west of road, directly opposite point of hill (rock) which extends toward creek at right angles to general direction of valley, in rock; tablet stamped "6741"----- | 6, 742. 393 |
| Menkiney's ranch, 7.8 miles northwest of, 300 feet east of road, at point of small hill which is covered with boulders; chisel mark on high point of boulder, marked "U. S.□B. M. 6681"----- | 6, 682. 06 |
| T. 16 N., R. 105 W., sec. 9, 8.3 miles northwest of Menkiney's ranch, 250 feet east of road directly opposite large canyon, on west side of creek and in line with high bare hill, in boulder; tablet stamped "6660"----- | 6, 661. 375 |
| Menkiney's ranch, 10 miles northwest of, 30 feet east of road, 100 feet west of point where road crosses shallow draw, on top of small boulder standing 1 foot above ground; chisel mark painted "U. S.□B. M. 6583"----- | 6, 583. 70 |
| T. 17 N., R. 105 W., sec. 27, 11.4 miles northwest of Menkiney's ranch, 100 feet east of road, in flat rock 4 feet above ground, rock forms point of west wall of short rocky canyon; tablet stamped "6554"----- | 6, 555. 218 |

MAXON 30' QUADRANGLE.

[Latitude 41°-41° 30'; longitude 109°-109° 30'.]

From sec. 27, T. 17 N., R. 105 W., northwest to sec. 4, T. 17 N., R. 106 W.

| | |
|---|------------|
| Miller's Canyon, on rock which forms exact point of hill, west wall, 12 feet from center of road north; chisel mark painted "6508 U.S.□B.M."----- | 6, 508. 78 |
|---|------------|

| | Feet. |
|---|-------------|
| Miller's Canyon, 1 mile northwest of, at point of hill forming west side of canyon, south side of Bitter Creek valley, 20 feet south of road at point where road turns up into canyon to cross wash; chisel mark on boulder, painted "U.S. <input type="checkbox"/> B.M. 6486"----- | 6, 487. 02 |
| Miller's Canyon, 2 miles northwest of, near northwest corner of sec. 16, T. 17 N., R. 105 W., in rock at west end of rocky ridge, on west side of gap where road leaves creek valley to go over hills; tablet stamped "6468"----- | 6, 469. 149 |
| Miller's Canyon, 3 miles northwest of, 40 feet from foot of north side of valley about 4 feet above ground, 1.1 meters below point where road turns away from creek valley to go over hills; chisel mark on high boulder, painted "U.S. <input type="checkbox"/> B.M. 6422"----- | 6, 422. 80 |

SOUTH BITTER CREEK QUADRANGLE.

[Latitude 41°-41° 30'; longitude 108° 30'-109°.]

From sec. 30, T. 13 N., R. 100 W. southwest along road to sec. 5, T. 15 N., R. 108 W., thence northwest to sec. 23, T. 16 N., R. 103 W.

| | |
|--|-------------|
| T. 17 N., R. 101 W., sec. 2, 6 miles southwest of Black Buttes, 40 feet east of road below high point of hill; iron post stamped "6963"----- | 6, 964. 449 |
| T. 17 N., R. 101 W., sec. 16, 9 miles southwest of Black Buttes, 40 feet east of road, 200 feet southwest of top of small hill; iron post stamped "6993"----- | 6, 994. 491 |
| T. 17 N., R. 101 W., sec. 30, 12 miles southwest of Black Buttes, 40 feet east of road; iron post stamped "7012"----- | 7, 018. 775 |
| T. 16 N., R. 102 W., sec. 11, 15 miles southwest of Black Buttes, 40 feet east of road; iron post stamped "6990"----- | 6, 991. 751 |
| T. 16 N., R. 102 W., sec. 22, 18 miles southwest of Black Buttes, 40 feet east of road, 1,000 feet east of point where valley passes through gap in small hill and falls rapidly; iron post stamped "6856"----- | 6, 857. 534 |
| T. 16 N., R. 102 W., sec. 33, 21.1 miles southwest of Black Buttes, 400 feet north of road, in sandstone cliff forming point of hill between two other points east and west; chiseled square marked "U.S. <input type="checkbox"/> B.M. 6805"----- | 6, 806. 57 |
| Mud Springs ranch (Erickson's), 1 mile east of, 40 feet south of road; chiseled mark on boulder, marked "U.S. <input type="checkbox"/> B.M. 6783"----- | 6, 784. 80 |
| Mud Springs ranch (Erickson's), 0.1 mile west of, in sec. 31, T. 16 N., R. 102 W., 30 feet south of road, 60 feet east of stone house, 10 feet west of fence running north-south, in top of boulder; tablet stamped "6771"----- | 6, 772. 344 |
| T. 16 N., R. 103 W., sec. 36, 1 mile west of Erickson's ranch, 40 feet north of stage road, on east end of rocky ridge; chisel mark on rock near top of small hill, painted "U.S. <input type="checkbox"/> B.M. 6758"----- | 6, 759. 66 |
| Mud Springs ranch (Erickson's), 3.6 miles west of, in sec. 23, T. 16 N., R. 103 W., 60 feet south of road, 100 feet east of Prettywater Creek; iron post stamped "6737"----- | 6, 738. 150 |

BRIDGER QUADRANGLE.

[Latitude 41°-41° 30'; longitude 110°-110° 30'.]

North down Smiths Fork to Robertson, thence west to Pine Grove.

| | |
|---|-------------|
| Steel sawmills, 2.6 miles north of, 40 feet west of road, at intersection of old and new roads, 500 feet west of creeks, in large boulder; aluminum tablet stamped "8906 Evan"----- | 8, 907. 787 |
|---|-------------|

Feet.

| | |
|---|-------------|
| Old St. Louis sawmill site, 400 feet west of, 100 feet west of road, 1.6 miles north of Robins's sawmill, at small creek, in large boulder; aluminum tablet stamped "8547 Evan"----- | 8, 549. 048 |
| Old St. Louis sawmill, 5 miles north of, Willow Creek and Timber roads, 25 feet west of junction, 75 feet north of Willow Creek road, south edge of first aspen grove, large boulder; aluminum tablet stamped "7926 Evan"----- | 7, 927. 778 |
| Willow Creek and Smiths Fork bench roads, 100 feet west of road forks, 300 feet north of Cold Springs; iron post stamped "7733 Evan"----- | 7, 734. 188 |
| Robertson post office, 0.25 mile west of, 200 feet east of Robertson schoolhouse, at northwest corner of fence; iron post stamped "7348 Evan"----- | 7, 349. 977 |
| Pine Grove schoolhouse, 300 yards south of, 50 feet west of intersection of roads; iron post stamped "7504"----- | 7, 505. 429 |
| From State line northeast down Henrys Fork 4 miles to Bulloch's ranch, thence northwest crossing Sage, Cottonwood, and Dry creeks to point near Robertson post office. | |
| Henrys Fork, junction with West Fork, 0.25 mile northeast of, 500 feet north of State line, 200 feet southeast of main stream, in open sage-brush flat, in large morainal boulder; aluminum tablet stamped "8535 Evan"----- | 8, 536. 847 |
| Bulloch's ranch, 250 feet southeast of corner of pasture fence, 0.85 mile southeast of ranch house, 600 feet south of Henrys Fork, 100 feet south of road, in large boulder; aluminum tablet stamped "8026 Evan"----- | 8, 027. 494 |
| Bulloch's ranch, 3 miles northwest of, top of divide between Henrys Fork and Sage Creek, 0.25 mile east of old Thacker sawmill, 25 feet north of road, in large boulder; aluminum tablet stamped "8735 Evan"----- | 8, 736. 876 |
| Sage and Cottonwood creeks, top of divide between, 5 feet north of road, 1.25 miles west of Hickie's pasture on Sage Creek, in large boulder; aluminum tablet stamped "8129 Evan"----- | 8, 130. 763 |
| Cottonwood Creek, 1.4 miles west of, 30 feet north of road, top of divide between Cottonwood and Dry creeks, in large boulder; aluminum tablet stamped "8106 Evan"----- | 8, 107. 257 |
| Smiths Fork, 0.3 mile east of, about 2 miles southeast of Robertson post office, 3 miles west of Dry Creek, on edge of first bench above Smiths Fork, 40 feet south of road, in large glacial boulder; aluminum tablet stamped "7683 Evan"----- | 7, 684. 945 |
| From Judd Bulloch's ranch on Henrys Fork southeast along Vernal road to point near Burntfork. | |
| Lonetree post office, 100 feet south of Lonetree Mercantile Store building, 150 feet west of schoolhouse at corner of fence, in large boulder; aluminum tablet stamped "7546 Evan"----- | 7, 547. 668 |
| Lonetree, 3 miles east of post office, south side of county road, 0.25 mile west of ford on Beaver Creek, base of buck fence in lane, in large boulder; bronze tablet stamped "7500 Evan"----- | 7, 501. 345 |
| Lonetree, 5 miles east of post office, 200 feet north of road on hill, large boulder; bronze tablet stamped "7354 Evan"----- | 7, 355. 744 |

| | Feet. |
|---|-----------|
| Burntfork post office, 2 miles south of, 300 feet south of house at Widdap's ranch, 400 feet west of road, in large boulder; bronze tablet stamped "7204 Evan"----- | 7,295.980 |

From Carter southeast along roads to Lonetree.

| | |
|---|-----------|
| Carter, 400 feet north of track, 5 feet west of telegraph pole, in top of stone post; bottom of square cut (C. & G. S. B. M. 16)----- | 6,502.490 |
| Carter, 3 miles southeast of, 40 feet southeast of road forks on summit; iron post stamped "6814 Adj. 1903"----- | 6,816.381 |
| Carter, 6 miles southeast of, 40 feet southeast of road from Carter to Fort Bridger, sand hill 75 feet high across road, on summit; marked "6727"----- | 6,729.53 |
| Intersection of road from Carter to Mountainview, inside wire fence in Harvey's garden; iron post stamped "6809"----- | 6,810.528 |
| Mountainview, 3 miles east of, inside wire fence opposite Stevens's blacksmith shop; iron post stamped "6856"----- | 6,657.191 |
| Mountainview, 6 miles southeast of, 30 feet southeast of road, opposite telephone pole 616; iron post stamped "6601"----- | 6,602.540 |
| Mountainview, 9 miles southeast of, 25 feet northeast of road, northwest side of Cottonwood Creek near mouth; iron post stamped "6859"----- | 6,860.234 |
| Road, 25 feet north of, where road forks near bridge over dry run; iron post stamped "7060"----- | 7,081.128 |
| Mouth of Henrys Fork canyon, 2 miles from, 30 feet east of road, at top of hill, 10 feet southeast of telephone pole marked "7601"; iron post stamped "7601"----- | 7,602.389 |
| Lonetree, 1.5 miles west of, where road turns east; iron post stamped "7576"----- | 7,577.796 |

(NOTE.—The above line is unadjusted and closes with an elevation of 7,549,558 for the standard bench mark at Lonetree, the adjusted elevation of which is given in line following.)

From Lonetree east along road to Burntfork.

(The first 4.7 miles is adjusted and is mean of two lines.)

| | |
|--|-----------|
| Lonetree, 100 feet south of Lonetree Mercantile Store, 150 feet west of schoolhouse, at fence corner, in top of boulder; aluminum tablet stamped "7546"----- | 7,547.668 |
| Lonetree, 1.5 miles east of, south of road, at fence in lane, 0.25 mile west of Beaver Creek fork, in large boulder, marked by a rock mound; bronze tablet stamped "7500"----- | 7,501.269 |
| Lonetree, 4.7 miles east of, 200 feet north of road, on hillside, in large boulder; bronze tablet stamped "7354"----- | 7,355.665 |

COKEVILLE QUADRANGLE.

[Latitude 42°-42° 30'; longitude 110° 30'-111°.]

From point 5.6 miles southwest of Cokeville by road to Cokeville, thence north over Oregon Short Line Railroad.

| | |
|--|-----------|
| Cokeville, 4.9 miles south of, 15 feet west of road, at junction of road to west; iron post stamped "6207 B 1909 19"----- | 6,209.290 |
| Cokeville, 2.8 miles south of, east edge of road, opposite mouth of canyon, on boulder; chisel point painted "6273 B. M. 138"----- | 6,275.08 |

Feet.

| | |
|---|-------------|
| Cokeville, 300 feet northwest of station, west edge of right of way, northeast corner of field; iron post stamped "6189 B 1909 20"----- | 6, 191. 188 |
| Cokeville, 0.5 mile north of, northeast corner of steel bridge over creek, in cap; copper nail, aluminum tag stamped "6192 B. M. 140"----- | 6, 198. 98 |
| Cokeville, 4.4 miles north of, east edge of right of way, at south end of gate to lane, 200 feet east of signpost "Marse Station," opposite fourth telephone pole north of milepost 88; iron post stamped "6118 B 1909 31"----- | 6, 117. 988 |

EVANSTON QUADRANGLE.

[Latitude 41°-41° 30'; longitude 110° 30'-111°.]

From Evanston southeast to Hilliard, thence south via Bear River to mouth of West Fork.

| | |
|--|-------------|
| Evanston, in front of Union Pacific R. R. station; top of rail----- | 6, 745. 0 |
| Evanston, south side of courthouse yard, 6 feet north of property line and south of east line of courthouse, in top of stone post; bronze tablet stamped "6752 Evan" (C. & G. S. 1912 Adj.)----- | 6, 753. 906 |
| Evanston, in front yard at Depot Hotel; iron post stamped "6744 Evan" (C. & G. S. 1912 Adj.)----- | 6, 745. 249 |
| Evanston, 3 miles southeast of, west side of Union Pacific R. R. track, 1 foot east of wire fence, opposite milepost 952; iron post stamped "6842 Evan"----- | 6, 843. 305 |
| Evanston, 6 miles southeast of, west side of old grade of Union Pacific R. R., 1 foot east of fence, 200 yards south of where bench comes down to grade; iron post stamped "6942 Evan"----- | 6, 943. 491 |
| Evanston, 9 miles southeast of, east side of old Union Pacific R. R., outside fence corner, at old side track; iron post stamped "7046 Evan"----- | 7, 047. 711 |
| Hilliard, 0.8 mile northwest of, south side of old grade of Union Pacific R. R.; iron post stamped "7179 Evan"----- | 7, 180. 789 |
| Hilliard, 75 feet northwest of post office, 600 feet northwest of old Union Pacific R. R. station; iron post stamped "7246 Evan"----- | 7, 247. 250 |
| Hilliard, 2 miles south of, opposite Bell's ranch, about 0.5 mile south of first cabin on west side of road; iron post stamped "7338 Evan"----- | 7, 334. 793 |
| Hilliard, 5 miles south of post office, east side of road opposite Robinson's ranch; iron post stamped "7491 Evan"----- | 7, 496. 075 |
| Hilliard, 8 miles southeast of post office, 0.1 mile from Goodman's ranch, corner of fence, 900 feet southwest of original Mill Creek channel; iron post stamped "7609 Evan"----- | 7, 610. 473 |
| Hilliard, 11 miles southwest of post office, 450 feet below Goodman road ford, east side of Bear River, at point where Hilliard Flat ditch reached height of east bank; iron post stamped "7773 Evan"----- | 7, 774. 402 |

From boundary north along Yellow Creek valley to Evanston.

| | |
|--|-------------|
| Evanston, 21.5 miles south of, 150 feet west of old Emigrant Road crossing on Yellow Creek, 5.5 miles northeast of southwest corner of Wyoming; iron post stamped "7218 Evan"----- | 7, 219. 316 |
| Evanston, 2.5 miles southwest of, 1 mile east of Yellow Creek, 30 feet south of forks of road; iron post stamped "6816 Evan"----- | 6, 817. 374 |

From Hilliard east to Aspen, thence southeast along Muddy Creek to divide west of mouth of west fork of Black Fork of Green River.

| | Feet. |
|---|-----------|
| Aspen, 500 feet west of old Union Pacific R. R. station, 56 feet north of old grade, top of cut bank in large sandstone beside large mound of rock; bronze tablet stamped "7387 Evan"----- | 7,888.387 |
| Aspen, 3.25 miles southeast of, 60 feet north of road, 400 feet west of gate to Mouselander's meadow, near top of small divide, in sandstone ledge beside mound of rock; aluminum tablet stamped "7581 Evan"----- | 7,582.353 |
| Aspen, 9.8 miles southeast of, on west slope of first divide going over into East Muddy Creek, 0.8 mile southeast of ford, 40 feet east of road, in large bowlder under mound of rock; aluminum tablet stamped "8299 Evan"----- | 8,300.941 |
| Beeksteads corral, 3.8 miles southeast of, 25 feet south of road, 400 yards north of old sawmill site, north side of creek, in large bowlder; aluminum tablet stamped "8908 Evan." (Could not be found to remark.)----- | 8,890.605 |
| Divide between Muddy Creek and Black's Fork, top of, 10 feet south of road, 300 feet west of intersection of road to Piedmont, 100 feet east of Bigelow's ditch, in large bowlder; aluminum tablet stamped "9214 Evan"----- | 9,215.499 |

From divide between Muddy Creek and west fork of Black Fork north via Moss cabin and Guild ranch to Piedmont.

| | |
|--|-----------|
| Old Fish Creek shingle mill, 300 feet south of, 250 feet west of creek, 300 feet east of forks of road to Vantassie Lake, in large limestone ledge near rock mound; aluminum tablet stamped "8908 Evan"----- | 8,809.826 |
| Moss ranch, 3.2 miles south of, 15 feet west of road, 400 feet south of Fish Creek crossing, in bowlder; aluminum tablet stamped "8466 Evan"----- | 8,467.152 |
| Moss ranch, 75 feet east of cabin, 10 feet west of road, in large bowlder; aluminum tablet stamped "7992 Evan"----- | 7,993.535 |
| Guild's ranch, 20 feet east of house, at northeast corner of same, alongside picket fence, in large sandstone; aluminum tablet stamped "7831 Evan"----- | 7,332.147 |

From mouth of West Fork of Green River north along Black Fork to Pine Grove.

| | |
|---|-----------|
| West Fork of Black Fork, 300 feet north of ford at mouth of, 50 feet west of road at fork of same, in bowlder; aluminum tablet stamped "8621 Evan"----- | 8,622.444 |
| West Fork, 2.6 miles northwest of, 20.5 miles southeast of Piedmont, 15 feet west of road in pine timber; iron post stamped "8576 Evan"----- | 8,577.942 |
| Piedmont, 17.5 miles southeast of, intersection of roads, 10 feet east of main road, 700 feet west of Black Fork; iron post stamped "8381 Evan"----- | 8,383.057 |
| Black Fork, 0.25 mile west of, 300 feet west of southwest corner of buck fence, 600 feet south of forks of road, about 14 miles southeast of Piedmont; iron post stamped "8069 Evan"----- | 8,070.972 |
| Smith's ranch, northeast corner of pasture fence, 11 miles southeast of Piedmont, 6 feet west of road, east side of small draw, iron post stamped "7794 Evan"----- | 7,796.018 |

From Pine Grove northwestward to Piedmont.

| | Feet. |
|--|----------|
| Piedmont bench, 20 feet south of top of, 300 feet east of west edge of road, 75 feet east of crossing of Biglow ditch No. 2; iron post stamped "7910 Evan"----- | 7,912.00 |
| White dip pens, 300 feet east of cabin, at forks of road, 8.4 miles southeast of Piedmont; iron post stamped "7310 Evan"----- | 7,284.92 |
| Piedmont, 75 feet east of old section house, 275 feet east of old station, 200 feet west of old grade of Union Pacific R. R.; iron post stamped "7048 Evan"----- | 7,050.00 |

From Piedmont west to Aspen.

| | |
|---|----------|
| Piedmont, 3.1 miles west of, on county road to Aspen, 15 feet south of road, at northwest corner of Easton's pasture fence; iron post stamped "7125 Evan"----- | 7,126.72 |
| Piedmont, 6.5 miles west of, 300 feet south of old railroad grade, 20 feet north of county road, top of divide between Piedmont and Aspen; iron post stamped "7490 Evan"----- | 7,491.34 |

MONTPELIER QUADRANGLE.

[Latitude 42°-42° 30'; longitude 111°-111° 30'.]

From Raymond along Oregon Short Line Railroad to border.

| | |
|---|----------|
| Raymond, 3 miles south of, on section line, 0.25 mile east of Idaho-Wyoming State line, northwest corner of alfalfa field belonging to J. Francis, 15 feet south of gate to lane; iron post stamped "6107 B 1909 29"----- | 6,108.80 |
|---|----------|

RANDOLPH QUADRANGLE.

[Latitude 41° 30'-42°; longitude 111°-111° 30'.]

From Fork road 11.5 miles southwest of Cokeville toward Cokeville.

| | |
|---|----------|
| Prixley ranch, 1 mile north of, 25 feet north of fence corner, 25 feet east of road; iron post stamped "6232 B 1909 18"----- | 6,233.74 |
| Prixley ranch, 3.2 miles north of, east edge of road, 250 feet south of dry creek, on boulder; chisel point painted "6227 B. M. 135"----- | 6,229.34 |

SALERATUS PASS QUADRANGLE.

[Latitude 41°-41° 30'; longitude 111°-111° 30'.]

From Yellow Creek southwest to southwest corner of Wyoming.

| | |
|---|----------|
| Evanston, 23.25 miles south of, 2.5 miles north of southwest corner of State of Wyoming, 10 feet north of old emigrant road, about 1.8 miles southwest of Yellow Creek crossing, summit of divide between Yellow Creek and Chalk Creek; iron post stamped "7507 Evan"----- | 7,508.40 |
| Evanston, 24 miles south of, 2 miles north of southwest corner of State of Wyoming, 12 feet west of old emigrant road at junction with another road running north and crossing divide west of emigrant road, 1.5 miles east of Chalk Creek, 4 miles northeast of Porcupine Mountain; iron post stamped "7069 Evan"----- | 7,070.64 |
| Wyoming, at southwest corner of, 27 miles south of Evanston, in top of corner stone, which is a red sandstone monument 12 by 12 inches square; bronze tablet, stamped "7150 Evan Slak"----- | 7,151.47 |

From point 16.5 miles south of Evanston northeast 14.7 miles.

| | Feet. |
|--|-------------|
| Evanston, 16.5 miles south of, 8 feet west of wagon road along Yellow Creek, 100 feet west of creek, 1.5 miles north of J. Johnson's ranch; iron post stamped "7056 Evan"----- | 7, 067. 572 |
| Evanston, 9 miles southwest of, about 3.8 miles southwest of Yellow Creek bridge, 0.25 mile northwest of Needle Rocks; iron post stamped "6899 Evan"----- | 6, 870. 855 |
| Evanston, 5.8 miles southwest of, 15 feet west of wagon road, 150 feet southwest of bridge across Yellow Creek; iron post stamped "6747 Evan"----- | 6, 749. 097 |

From point near Woodruff, Utah, southeast by road to Evanston, Wyo.

| | |
|---|-------------|
| Evanston, 7.9 miles northwest of, steel bridge over Bear River, in northeast corner of stone abutment; aluminum tablet stamped "6540 B 1904 9"----- | 6, 543. 144 |
| Evanston, 3.7 miles northwest of, at intersection of road west, 75 feet west of railroad track, northeast corner of field, 10 feet north of irrigation ditch; iron post stamped "6635 B 1909 10"----- | 6, 638. 589 |
| Evanston, 1.5 miles west of, at junction of mill road, main line and line to coal mine, at switch signal, in tie; copper nail, not stamped. | 6, 706. 88 |

TWIN BUTTES QUADRANGLE.

[Latitude 41°-41° 30'; longitude 109° 30'-110°.]

Part of line from Lemetree to Bridgeport (single-spur line).

(For other parts see Aspen Mountains quadrangle, Wyo., and Marsh Peak and Browns Park quadrangles, Utah.)

| | |
|---|-------------|
| Burntfork, 0.3 mile east of, at intersection of farm road and main road; iron post stamped "7125"----- | 7, 125. 063 |
| Burntfork, 2.5 miles east of, 30 feet south of road; iron post stamped "7003"----- | 7, 003. 543 |
| T. A. Welch's field, where road enters, 15 feet south of road, near gate; iron post stamped "6769"----- | 6, 763. 605 |
| Burntfork, 9 miles from, 600 feet east of corner fence; iron post stamped "6628"----- | 6, 627. 833 |
| Welch's and Stover's ranches, half way between, 0.5 mile east of ravine, on summit; iron post stamped "6614"----- | 6, 613. 703 |
| Junction of main road and road to Stover's ranch, on point of hill; iron post stamped "6391"----- | 6, 390. 895 |
| Franklin's ranch, 0.5 mile west of, 30 feet north of road; iron post stamped "6335"----- | 6, 434. 238 |
| Summit east of creek, in forks of road; iron post stamped "6161"----- | 6, 160. 874 |

Crow Creek and Freedom quadrangles.

LINCOLN COUNTY.

The elevations in the following list were determined by primary leveling and accord with the 1912 adjustment.

The leveling was done in 1911 by O. G. Taylor.

CROW CREEK QUADRANGLE.

[Latitude 42° 30'-42° 45'; longitude 111°-111° 15'.]

From Idaho-Wyoming State line near Fairview, Wyo., north to point 4.2 miles north of Fairview.

| | | |
|--|-----------|-----|
| Hardman's Hollow, 0.5 mile north of, 0.5 mile northeast of Idaho-Wyoming State line road crossing, on west edge of Star Valley road, on rocky point; painted point on rock, painted "B. M. 6268 21"----- | 6, 289. — | 83 |
| Hardman's Hollow, 1.3 miles northeast of, 40 feet west of Crow Creek, on east edge of Star Valley road, below rocky point; painted point on rock, painted "B. M. 6247 22"----- | 6, 248. — | 44 |
| Fairview, 1.5 miles southwest of, 200 feet north of Crow Creek, 1,000 feet west of edge of Star Valley, on north edge of Star Valley road; spike in base of corner fence post, post painted "B. M. 6249 23"----- | 6, 250. — | 85 |
| Fairview, 0.5 mile west of, 280 feet south of T road, 80 feet west of Crow Creek, 15 feet west of Star Valley road; iron post stamped "6191 1911"----- | 6, 192. — | 70C |
| Fairview, 1.5 miles northwest of, on west edge of Fairview-Auburn road at bend of road around point; chiseled point on top of rock, rock painted "B. M. 6165 24"----- | 6, 166. — | 22 |
| Fairview, 2.4 miles northwest of, 3.25 miles due west of Afton, Wyo., 5 feet southwest of road intersection; iron post stamped "6146 1911 10"----- | 6, 147. 9 | 00 |
| Fairview, 3.2 miles north of, 40 feet west of Fairview-Auburn road, on small rise, at northeast corner of vacant log house; spike in top of bottom log, log painted "B. M. 6130 25"----- | 6, 131. 8 | 3 |
| Fairview, 4.2 miles north of, 125 feet west of vacant log house, 20 feet east of Fairview-Auburn road; spike in base of gate post, painted "B. M. 6095 26"----- | 6, 096. 5 | 3 |

FREEDOM QUADRANGLE.

[Latitude 42° 45'-43°; longitude 111°-111° 15'.]

From point 4.2 miles north of Fairview north and west to Idaho-Wyoming State line near Auburn.

| | | |
|--|------------|---|
| Fairview, 5.2 miles north of, 2.5 miles south of Auburn, 180 feet east of H. D. Clark's ranch house, 20 feet south of yard gate, 20 feet west of Fairview-Auburn road; iron post stamped "6068 1911 11"----- | 6, 069. 84 | 7 |
| Auburn, 1.2 miles south of, 25 feet west of Fairview-Auburn road; spike in base of telephone pole, pole painted "B. M. 6038 27"----- | 6, 069. 21 | 1 |
| Auburn, 0.5 mile south of, 10 feet southwest of junction of Fairview-Auburn road with Stump Creek road; iron post stamped "6040 1911 12"----- | 6, 042. 16 | 3 |
| Auburn, 1 mile west of, 20 feet south of Stump Creek road; spike in base of corner fence post at section corner, post painted "B. M. 6072 28"----- | 6, 078. 46 | 3 |
| Auburn, 2.1 miles west of, 220 feet west of Stump Creek road crossing, north edge of road; spike in base of corner fence post, post painted "6105 B. M. 29"----- | 6, 106. 89 | |
| Auburn, 3 miles west of, 300 feet north of Stump Creek, on south edge of "Old" Lander trail, on flat; chiseled point on rock, rock painted "6135 B. M. 30"----- | 6, 187. 17 | |

APPENDIX A.

ELEVATIONS ADJUSTED BY THE COAST AND GEODETIC SURVEY FROM PRECISE LEVELING.

Almond, Arvada, Bosler, Bridger, Cheyenne, Chugwater, Creston, Croton, Dayton, Douglas, Eketa, Evanston, Forsteel, Fremont, Granger, Hartville, Laramie, Lusk, Manville, Mooreroft, Newcastle, Opal, Rawlins, Rock Springs (15'), Roset, Sherman, Sheridan, Sibylee, Sundance, Table Mountain (15'), and Widowfield quadrangles.

CARBON, CONVERSE, CROOK, LARAMIE, LINCOLN, SHERIDAN, SWEETWATER, UINTA, AND WESTCOTT COUNTIES.

The following descriptions and elevations are taken from reports and manuscript of the Coast and Geodetic Survey and are published by permission of the superintendent of that bureau. The bench marks were established from precise levels by the Coast and Geodetic Survey and were included in the 1912 adjustment by that survey and are likely to be changed only slightly by any future adjustment.

NEWCASTLE QUADRANGLE.

[Latitude 43° 30'–44°; longitude 104°–104° 30'.]

From point near Dewey northwest along Chicago, Burlington & Quincy Railroad to point near Jerome.

| | Feet. |
|--|-------------|
| Dewey, 2 miles north of, 40 meters west of center line of main track at foot of the Wyoming Hill, on top of State line monument lettered "S. D." on east face "WY" on west face, "38.24 M" on south face, and "1904" on north face; top of sandstone post marked "U.S.B.M." (C. & G. S. b. m. S. D.-WY 38.24)----- | 8, 746. 439 |
| Dakoming, 29 meters east of center line of main track, directly opposite station signboard "Dakoming" and center of snow fence; top of iron pipe (C. & G. S. b. m. Q 6)----- | 8, 833. 316 |
| Clifton, 4.5 meters southwest of center line of main track, on north-northwest of railroad station (measured along tracks), inside of southeast of railroad station; copper bolt (C. & G. S. b. m. R 6)--- | 8, 946. 009 |
| Clifton, 30 meters southwest of center line of main track, 48 meters northwest of railroad station (measured along tracks), inside of right of way, flush with ground; red metal disc (C. & G. S. b. m. S 6)----- | 8, 939. 198 |
| Clifton, 1.6 miles northwest of, 2.4 meters northeast of center line of main track, about halfway between mile poles 505 and 506, on east wall of small concrete bridge, directly over central pier, set vertically in lead; copper bolt (C. & G. S. b. m. T 6)----- | 8, 985. 914 |
| Johnson siding, 30 meters northeast of center line of main track, directly opposite telephone booth, 85 meters southeast of bridge, N 518.80; top of iron pipe (C. & G. S. b. m. U 6)----- | 4, 341. 507 |

| | Feet. |
|---|-------------|
| Newcastle, 5.8 meters northeast of center line of main track, at north-west point of railroad station park; top of iron pipe (C. & G. S. b. m. V 6)----- | 4, 316. 875 |
| Newcastle, at south corner of Riordan Building, directly opposite station, 1.1 meters above sidewalk, red metal disc (C. & G. S. b. m. W 6)----- | 4, 323. 000 |
| Newcastle, at north corner of Newcastle City Hall, facing Warren Street, in water-table stone 0.4 meter above sidewalk; red metal disc (C. & G. S. b. m. X 6)----- | 4, 363. 323 |
| Newcastle, 17 meters southeast of center line of Cambria branch of Chicago, Burlington & Quincy R. R., at a point 61 meters southwest of pile trestle bridge O 49, in top of limestone post; square cut (C. & G. S. b. m. "U. S. G. S. M. M.")----- | 4, 327. 344 |
| (Note.—Bronze tablet in top of post was not used as bench mark on account of inclination of post.) | |
| Pedro, 39 meters north of center of main track, at point where wagon road crosses tracks, 130 meters east of station at signboard "Pedro" and telephone booth, outside the railroad right of way near property line; top of iron pipe (C. & G. S. b. m. Y 6)----- | 4, 203. 794 |
| Osage, 2.3 miles southeast of, 30 meters northeast of center line of main track, at summit of long grade northwest of WYT ranch, near middle of snow fence, set just inside the right of way; top of iron pipe (C. & G. S. b. m. Z 6)----- | 4, 314. 624 |

SUNDANCE QUADRANGLE.

[Latitude 44°-44° 30'; longitude 104°-104° 30'.]

From point near Osage northwest along Chicago, Burlington & Quincy Railroad to point near Jerome.

| | |
|---|-------------|
| Jerome, 5 meters northeast of center line of main track, on southeast end of masonry water-tank pier nearest the tracks; copper bolt (C. & G. S. b. m. A 7)----- | 4, 211. 481 |
| Jerome, 37.8 meters southwest of center line of main track, 45 meters northwest of section house, just inside railroad right of way; top of iron pipe (C. & G. S. b. m. B 7)----- | 4, 209. 937 |

MOORCROFT QUADRANGLE.

[Latitude 44°-44° 30'; longitude 104° 30'-105°.]

From point near Osage northwest along Chicago, Burlington & Quincy Railroad to point near Moorcroft.

| | |
|---|-------------|
| Jerome, 2 miles northwest of, 2.4 meters southwest of center of main track, on southwest end of northwest concrete pier of bridge 545.10, 2.7 meters below top of rail; copper bolt (C. & G. S. b. m. C 7)----- | 4, 176. 507 |
| Upton, 0.5 mile southeast of, 2.5 meters northeast of center line of main track, on northeast end of northwest concrete abutment of bridge 548.42; copper bolt (C. & G. S. b. m. D 7)----- | 4, 223. 043 |
| Upton, 2.5 meters southwest of center line of main track, on northeast foundation wall of coal elevator, 170 meters southeast of railroad station; copper bolt (C. & G. S. b. m. E 7)----- | 4, 234. 312 |
| Upton, 190 meters northeast of center line of main track, on north east side of concrete block building known as "Upton Hall," set vertically flush with concrete window sill; red metal disk (C. & G. S. b. m. F 7)----- | 4, 234. 306 |

| | Feet. |
|---|-------------|
| Upton, 28 meters northeast of center line of main track, on concrete water tank foundation wall nearest the tracks, northwest side of railroad station; red metal disk (C. & G. S. b. m. G 7)----- | 4, 284. 678 |
| Thornton, 18 meters northeast of center line of main track, 65 meters northwest of railroad station, on northwest side of road crossing, just inside railroad right of way; top of iron pipe (C. & G. S. b. m. H 7)----- | 4, 828. 521 |
| Kara, 2.2 miles southeast of, 14.4 meters northeast of center line of main track, near middle of second curve east of Kara siding at main track, near middle of second curve east of Kara siding, at small side cut; top of iron pipe (C. & G. S. b. m. I 7)----- | 4, 845. 713 |
| Kara, directly opposite station signboard "Kara" and 15 meters northwest of telephone booth, 21 meters north of center line of main track, just inside the right of way, projecting 4 inches above ground; red metal disk (C. & G. S. b. m. J 7)----- | 4, 850. 186 |
| Kara, 10 meters south of center line of main track, 100 meters west of west end of Kara siding, on middle span of a concrete culvert, set vertically in cement; copper bolt (C. & G. S. b. m. K 7)----- | 4, 845. 018 |
| Kara, 0.8 mile northwest of, 12 meters southwest of center line of main track, on middle of span of concrete culvert, 0.25 mile northwest of section pole D 94-D 95, set vertically in cement, 8 meters below track; copper bolt (C. & G. S. b. m. L 7)----- | 4, 854. 725 |
| Moorcroft, 4.8 miles southeast of, 4 meters west of center line on middle of span of small concrete culvert, 300 meters south of first wagon road crossing north of Kara siding; copper bolt (C. & G. S. b. m. M 7)----- | 4, 877. 517 |
| Moorcroft, 2.7 miles southeast of, 7 meters southwest of center line of main track, on middle of span of a small concrete culvert, 390 meters southeast of road crossing at small ranch; copper bolt (C. & G. S. b. m. N 7)----- | 4, 283. 023 |
| Moorcroft, 34 meters northeast of center line of main track, on concrete foundation of southeast water tank, 30 meters east of railroad station; red metal disk (C. & G. S. b. m. O 7)----- | 4, 206. 940 |
| Moorcroft, 4.6 meters northeast of center line of main track, on masonry foundation of northwest water tank, 40 meters northwest of railroad station; bottom of square hole (C. & G. S. b. m. P 7)----- | 4, 206. 865 |
| Moorcroft, 38 meters southwest of center line of main track, 15 meters southwest of center of highway, 71 meters northwest of road crossing, 140 meters northwest of railroad station; set vertically and flush with ground; red metal disk (C. & G. S. b. m. Q 7)----- | 4, 200. 149 |
| Moorcroft, 1.5 miles northwest of, 2.5 meters southwest of center line of main track, on southwest end of southeast concrete abutment of bridge 570.74 over Belle Fourche or North Fork of Cheyenne River; red metal disk (C. & G. S. b. m. R 7)----- | 4, 157. 820 |

ROKET QUADRANGLE.

[Latitude 44°-44° 30'; longitude 105°-105° 30'.]

From point near Moorcroft westerly along Chicago, Burlington & Quincy Railroad to point near Gillette.

Moorcroft, 2.2 miles northwest of, 2.5 meters south of center line of main track, on south end of east concrete abutment of bridge 571.41 over Donkey Creek; copper bolt (C. & G. S. b. m. S 7)----- 4, 157. 283

| | Feet. |
|---|-------------|
| Wessex, 2 miles southeast of, 4.2 meters northeast of center line of main track, on northeast end of southeast abutment of a small concrete culvert, 1.6 meters below top of rail; copper bolt (C. & G. S. b. m. T 7)----- | 4, 209. 132 |
| Wessex, 28 meters north of center line of main track, 350 meters west of station signboard "Wessex" just inside of right of way; top of iron pipe (C. & G. S. b. m. U 7)----- | 4, 218. 246 |
| Roset, 29 meters south of center line of main track, directly opposite store and post office, on east side of railroad crossing, just inside of right of way; top of iron pipe (C. & G. S. b. m. V 7)----- | 4, 283. 331 |
| Roset, 4.4 miles west of, 2.2 meters north of center line of main track, on north end of east concrete abutment of bridge 596.50; bottom of hole in horizontal surface (C. & G. S. b. m. W 7)----- | 4, 358. 745 |
| Minturn, 17 meters north of center line of main track, 190 meters west of station signboard "Minturn," near telephone booth, set flush with ground, just inside right of way; red metal disk (C. & G. S. b. m. X 7)----- | 4, 396. 966 |
| Gillette, 4.2 miles east of, 8.5 meters north of center line of main track of railroad, at east end of cut showing rock exposure, on top of large flat boulder, 2 meters below top of rail; bottom of square hole (C. & G. S. b. m. Y 7)----- | 4, 449. 640 |
| Gillette, 6 meters south of center line of main track, at northeast corner of railroad station park; top of iron pipe (C. & G. S. b. m. Z 7)----- | 4, 541. 651 |
| Gillette, at southwest corner of Olzer's concrete store building, facing Gillette Avenue, set horizontally 0.2 meter above sidewalk; red metal disk (C. & G. S. b. m. A 8)----- | 4, 546. 930 |
| Gillette, 6 meters south of center line of main track, on center of most easterly concrete pier of coal chutes, set vertically in cement; copper bolt (C. & G. S. b. m. B 8)----- | 4, 544. 062 |

BOHETA QUADRANGLE.

[Latitude 44°-44° 30'; longitude 105° 30'-106°.]

From point near Gillette northwesterly along Chicago, Burlington & Quincy Railroad to point near Croton.

| | |
|--|-------------|
| Gillette, 3.1 miles west of, 0.25 mile west of milepole 600, 22 meters south of center of main track, at east end of cut on curve, 0.5 meter above top of rail, on chiseled bench on low flat outcrop of rock; bottom of square hole (C. & G. S. b. m. C 8)----- | 4, 665. 732 |
| Sparta, 24 meters north of center line of main track, near railroad fence line, just west of telephone booth, 300 meters east of station signboard "Sparta"; top of iron pipe (C. & G. S. b. m. D 8)----- | 4, 747. 333 |
| Oriva, 4.3 meters northeast of center line of main track, 20 meters southeast of railroad station, on southeast end of old masonry water-tank pier nearest track; bottom of square hole (C. & G. S. b. m. E 8)----- | 4, 650. 988 |
| Oriva, 31 meters northeast of center line of main track, 80 meters northwest of railroad station, just inside right of way, near snow fence; top of iron pipe (C. & G. S. b. m. F 8)----- | 4, 641. 086 |
| Oriva, 1.5 miles northwest of, 2.5 meters southwest of center line of main track, on concrete coping of bridge, directly over northeast pier, just northeast of 1-mile signboard "Oriva"; copper bolt (C. & G. S. b. m. C 8)----- | 4, 611. 877 |

| | Feet. |
|--|-------------|
| Kier, 25 meters northeast of center line of main track, directly opposite station signboard "Kier," north of telephone booth, 1 meter above top of rail; top of iron post (C. & G. S. b. m. H 8)----- | 4, 433. 859 |
| Felix, 1.3 miles southeast of, 10 meters southwest of center line of main track, about halfway between milepoles 614 and 615, northwest end of cut, on flattest of a group of rocks; bottom of square hole (C. & G. S. b. m. I 8)----- | 4, 301. 832 |
| Felix, 140 meters northeast of center line of main track, directly opposite point pole 606 some 2 meters southeast of Felix station, just outside right of way fence; top of iron pipe (C. & G. S. b. m. J 8)----- | 4, 249. 473 |
| Felix, 4.3 meters northeast of center line of main track, 20 meters northwest of station, on northwest end of masonry water-tank pier nearest tracks; bottom of square hole (C. & G. S. b. m. K 8)----- | 4, 234. 814 |
| Felix, 2.9 miles northwest of, on northeast end of southeast concrete pier of plate-girder bridge 618.82 over Wild Horse Creek, 2.3 meters below top of rail, set vertically in lead; copper bolt (C. & G. S. b. m. L 8)----- | 4, 104. 382 |
| Echeta, 25.2 meters northeast of center line of main track, on middle of second concrete water-tank pier counting from northwest, set vertically in lead; copper bolt (C. & G. S. b. m. M 8)----- | 4, 061. 557 |
| Echeta, 27.2 meters northeast of center line of main track, just north of railroad station, on north side of highway; top of iron pipe (C. & G. S. b. m. N 8)----- | 4, 078. 834 |
| Echeta, 2.3 miles northwest of, 6 meters southeast of center line of main track of railroad, on end of west wing wall of concrete culvert and cattle pass, 2.5 meters below top of rail; copper bolt (C. & G. S. b. m. O 8)----- | 3, 996. 019 |

CROTON QUADRANGLE.

[Latitude 44° 30'–45°; longitude 105° 30'–106°.]

From point near Croton northwest, southwest, and west along Chicago, Burlington & Quincy Railroad to point near Lariat.

| | |
|--|-------------|
| Croton, 8 meters southwest of center line of main track, on southeast end of third masonry water-tank pier from tracks; bottom of square hole (C. & G. S. b. m. P 8)----- | 3, 953. 978 |
| Croton, 22 meters southwest of center line of main track, directly opposite old railroad station and northwest end of Croton siding, outside right of way, just northeast of county road; top of iron pipe (C. & G. S. b. m. Q 8)----- | 3, 960. 694 |
| Lariat, 2.5 miles south of, 14.5 meters northeast of center line of main track, at about milepole 631.2, in stone flush with ground with triangle and circle in center, marking "Rail" triangulation station of the Geological Survey in the location of the Sheridan-Crook county line in 1908; aluminum tablet (C. & G. S. b. m. same as U. S. G. S. triang. sta. Rail)----- | 3, 900. 258 |

ARVADA QUADRANGLE.

[Latitude 44° 30'–45°; longitude 106°–106° 30'.]

From point near Lariat northwest, west, and southwest along Chicago, Burlington & Quincy Railroad to point near Ulin.

| | |
|---|-------------|
| Lariat, 36 meters west of center line of main track, opposite section house and 175 meters south of north end of Lariat siding, just inside right of way; top of iron pipe (C. & G. S. b. m. R. 8)----- | 3, 890. 796 |
|---|-------------|

| | Feet. |
|---|-----------|
| Arvada, 450 meters south of Arvada railroad station on northeast end of northwest concrete pier of bridge 640.73 over Powder River, 1 meter below top of rail; red metal disk (C. & G. S. b. m. S 8)---- | 3,655.584 |
| Arvada, 40 meters south of Arvada railroad station, 7.5 meters west of center line of main track, just north of mail catcher; top of iron pipe (C. & G. S. b. m. T 8)----- | 3,653.008 |
| Arvada, 50 meters north of Arvada railroad station, 4.7 meters west of center line of main track, on south end of masonry water-tank pier nearest track; bottom of square hole (C. & G. S. b. m. U 8)--- | 3,654.895 |
| Kendrick, directly opposite road crossing and telegraph office near northeast end of Kendrick siding, 34 meters northwest of center line of main track; just inside right of way; top of iron pipe (C. & G. S. b. m. V 8)----- | 3,860.284 |
| Cadiz, 15 meters northeast of center line of main track, 20 meters northwest of road crossing just inside right of way, in sandstone boulder flush with ground; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. W 8)----- | 3,783.674 |
| Big Corral, 6.7 miles east of Clearmont, near U-Cross Big Corral ranch, at center of railway siding, opposite wagon scales on the road on north side of track, 13.53 meters north of center of track, 1 meter south of right of way fence; top of iron pipe (C. & G. S. b. m. O 4)----- | 3,800.028 |
| Clearmont, at intersection of New York Street and Pennsylvania Avenue, 1.4 meters north of well building, 21.7 meters northwest of post office, 43.2 meters south of center of track; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. N 4)----- | 3,920.504 |
| Clearmont, in western water tank near railroad station, in west end of center pier, 37.96 meters north of center of main track, 30 centimeters from end of abutment; copper bolt (C. & G. S. b. m. M 4)--- | 3,919.756 |
| Clearmont, 3.2 miles west of, in steel girder bridge 360, at north end of west abutment, in center of concrete coping stone, 2.6 meters north of center track; red metal disk (C. & G. S. b. m. L 4)----- | 3,904.224 |

SHERIDAN QUADRANGLE.

[Latitude 44° 30'-45°; longitude 106° 30'-107°.]

From point near Clearmont northwesterly along Chicago, Burlington & Quincy Railroad to point near Alger.

| | |
|---|-----------|
| Ulm, 2.7 miles east of, in concrete cattle way under railroad, 3.85 meters north of center of track, 12 centimeters from face, 80 centimeters from end of wall; copper bolt (C. & G. S. b. m. K 4)----- | 4,269.444 |
| Ulm, opposite first pole west of railroad station, 53.6 meters north of center of track, 39.2 meters from northwest corner of station, 1 meter south of right-of-way fence; top of iron pipe (C. & G. S. b. m. J 4)----- | 4,442.840 |
| Verona, opposite railroad station, 27 meters north of center of track, 1 meter south of right-of-way fence, 1 meter above grade; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. I 4)----- | 4,011.344 |
| Verona, 3.3 miles west of, 0.1 mile west of milepost 683, in concrete cattleway under Burlington Route tracks, in concrete coping at southwest corner of bridge, 5.4 meters south of track, 2.15 meters from end of coping 2 meters below grade; red metal disk (C. & G. S. b. m. H 4)----- | 3,860.019 |

| | Feet. |
|--|-------------|
| Arno, 215 feet east of milepole 687, opposite section house, 44.8 meters north of center of track, 1 meter south of right-of-way fence, 1 meter above grade; top of iron pipe (C. & G. S. b. m. G 4)----- | 3, 775. 429 |
| Wakely, 0.25 mile east of milepole 694, in concrete wall of channel for an irrigation ditch under railroad, in north end of east wall, 7.05 meters north of center of track, 15 centimeters from inner surface, 15 centimeters from end of wall; brass bolt (C. & G. S. b. m. F 4)----- | 3, 751. 016 |
| Sheridan, southwest corner of W. Burkitt and South Main streets, in northeast corner of grounds of Sheridan County courthouse, 5.65 meters from corner of curbing, in east face of concrete post, 1.25 meters from ground; red metal disk (C. & G. S. b. m. E 4)----- | 3, 755. 104 |
| Sheridan, at northwest corner of Gould and Lowcks streets, at southeast corner of grounds of Federal Building, 5.1 meters from street corner, 1 meter from inside line of each sidewalk; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. D 4)----- | 3, 744. 738 |
| Sheridan, at northeast corner of Crook and Fourth streets, 375 feet southeast of station, in top of brick pier; copper disk marked "U. S. Geological Survey" and stamped with approximate latitude and longitude; cross cut on top of pier a little east of center is bench mark (C. & G. S. b. m. Astro same as U. S. G. S. astro-nomic station)----- | 3, 733. 907 |
| Sheridan, 1.4 miles from, in concrete wall of inverted siphon for an irrigation ditch, under railroad, in center of concrete coping, 3.22 meters west of track; copper bolt (C. & G. S. b. m. C 4)----- | 3, 717. 246 |
| Dietz, 2.4 miles north of, in steel girder bridge 705.47 over Goose Creek, in west end of north abutment, in center of coping stone, 2.14 meters west of center of track; copper bolt (C. & G. S. b. m. B 4)----- | 3, 624. 294 |
| Alger, in steel girder bridge 707.74 over Tongue River, in coping stone at south end of east abutment, 2.14 meters south of center of track, 45 centimeters from side, 80 centimeters from end of coping stone; red metal disk (C. & G. S. b. m. A 4)----- | 3, 634. 005 |

DAYTON QUADRANGLE.

[Latitude 44° 30'–45°; longitude 107°–107° 30'.]

From point near Alger northwesterly along Chicago, Burlington & Quincy Railroad to Montana-Wyoming State line.

| | |
|--|-------------|
| Alger, in steel-girder bridge 707.74 over Tongue River, in coping stone at south end of east abutment, 2.14 meters south of center of track, 45 centimeters from side, 80 centimeters from end of coping stone; red metal disk (C. & G. S. b. m. A 4)----- | 3, 634. 005 |
| Monarch, 0.7 mile north of, 400 feet east of Slater Creek, in concrete headwall for an inverted siphon, the crossing for an irrigation ditch under railroad, in northwest corner of wall, 3.6 meters south of center of track, 13 centimeters from each face of wall, 1 meter above grade; copper bolt (C. & G. S. b. m. Z 3)----- | 3, 669. 720 |
| Ranchester, 0.6 mile west of station, 330 feet east of highway crossing, 6.29 meters south of center of track; square hole in top of red sandstone post, marked "U.S.B.M. C. & G. S. 1908" (C. & G. S. b. m. same as Ranchester SE. Base of the U. S. G. S.)----- | 3, 791. 236 |

LUSK QUADRANGLE.

[Latitude 42° 30'-43°; longitude 104°-104° 30'.]

From point 3 miles west of Van Tassel northwest along Chicago & North Western Railway to Manville.

| | Feet. |
|--|-------------|
| Van Tassel, 3 miles west of, on right of way, 11½ rails east of mile-post 474, in line with telegraph poles on south side of track, 35 feet from center of track, 65 feet from fence, about opposite grade point at western end of shallow cut; bottom of square hole in top of limestone post, marked "U.S.□B.M." (C. & G. S. b. m. U 1)----- | 4, 764. 544 |
| Node Ranch, opposite and 7 feet south of station sign, 300 yards east of section house 92, 24 feet south of station platform, 36 feet south of center of main track; bottom of square hole in top of limestone post, marked "U.S.□B.M." (C. & G. S. b. m. V 1)----- | 4, 939. 341 |
| Lusk, in northwest corner of station park, 8 feet from either fence, 115 feet west of west end of station, 18 feet south of center of main track; bottom of square hole in top of limestone post, marked "U.S.□B.M." (C. & G. S. b. m. W 1)----- | 5, 014. 721 |

MANVILLE QUADRANGLE.

[Latitude 42° 30'-43°; longitude 104° 30'-105°.]

From Manville west along Chicago & North Western Railway to point near Shawnee.

| | |
|--|-------------|
| Manville, 6 paces west of mile post 500, about 45 feet north of center of railroad track, 6 rails west of where main street of Manville crosses the track; bottom of square hole in top of limestone post, marked "U. S.□B. M." (C. & G. S. b. m. X 1)----- | 5, 245. 180 |
| Keeline, 10 rails west of section house 96, 1 rail east of east end of station platform, 72 feet south of track, 21 feet north of fence; bottom of square hole in top of limestone post, marked "U. S. □B. M." (C. & G. S. b. m. Y 1)----- | 5, 288. 663 |
| Lost Spring, on right of way, 18½ rails west of west end of station platform, in line with telegraph poles, south side of section house 97, 9 rails east of east side of section house, 16 paces from center of track, 16 paces from fence; bottom of square hole in top of limestone post, marked "U. S.□B. M." (C. & G. S. b. m. Z 1)----- | 4, 994. 591 |

DOUGLAS QUADRANGLE.

[Latitude 42° 30'-43°; longitude 105°-105° 30'.]

From point near Shawnee southwest along Chicago & North Western Railway to Orin, thence southeast along Colorado & Southern Railway to point near Bona.

| | |
|--|-------------|
| Shawnee, on right of way, in line with telegraph poles, 57 feet from fence, 39 feet south of track, 6½ rails west of switch stand, 5½ rails east of station sign; bottom of square hole in top of limestone post, marked "U. S.□B. M." (C. & G. S. b. m. A 2)----- | 5, 024. 055 |
| Fisher, on right of way, 42 feet south of track, in line with telegraph poles, 2 rails east of east end of station platform, 3½ rails east of station sign; bottom of square hole in top of limestone post, marked "U. S.□B. M." (C. & G. S. b. m. B 2)----- | 4, 760. 512 |

| | Feet. |
|--|-------------|
| Orin Junction, 0.5 mile east of, on small red sandstone arched culvert on south side of track, on top stone of west wall, about 11 feet from center of track; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. T 1)----- | 4, 690. 945 |
| Orin Junction, in southwest stone pier of water tank, on side toward the Colorado & Southern Railway track; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. S 1)----- | 4, 704. 985 |
| Orin Junction, 0.8 mile southeast of, on right of way of Colorado & Southern Ry., 6 feet from telegraph milepole 153, 15 feet east of center of track, in top of sandstone post set with 6 inches projecting from ground; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. R. 1)----- | 4, 673. 377 |
| Bona, 1 mile south of, 25 feet east of railroad track, between third and fourth telegraph poles south of milepole 147, 10 feet north of fourth pole, on a 4½-foot sandstone post projecting 6 inches from ground; bottom of square hole. (C. & G. S. b. m. Q 1)----- | 4, 701. 375 |

JETSAM QUADRANGLE.

[Latitude 42°-42° 30'; longitude 105°-105° 30'.]

Near Glendo.

| | |
|---|-------------|
| Glendo, 0.5 mile south of, on small deck girder bridge 185, in top of north abutment, about 10 feet west of west rail and about 5 feet below top of rail, 8 inches from inner edge of abutment, 12 inches from retaining wall at end of bridge; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. P 1)----- | 4, 697. 661 |
|---|-------------|

HARTVILLE QUADRANGLE.

[Latitude 42°-42° 30'; longitude 104° 30'-105°.]

| | |
|--|-------------|
| From point near Glendo south along Colorado & Southern Railway to Wheatland. | |
| Cassa railroad siding, 40 feet east of track, 10 feet south of first telegraph pole north of milepole 131, on post set 4 feet in ground; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. O 1.)----- | 4, 487. 215 |
| Wendover, on Colorado & Southern Ry., in northeast stone pier of water tank; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. N 1.)----- | 4, 484. 840 |
| Hartville Junction, 300 yards north of railroad section house, 4 paces south of third telegraph pole south of milepole 119, 11 steps west of track; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. M 1.) Stone was broken in shipping and letters "B. M." were destroyed, but the bench mark was not injured.)----- | 4, 571. 418 |
| Buckhorn, 1 mile southeast of, 40 feet north of railroad track, 12 feet west of telegraph milepost 111; bottom of square hole in top of sandstone post, marked "U. S. \square B. M." (C. & G. S. b. m. L 1)----- | 4, 742. 572 |
| Uva, in southwest stone pier of water tank on north side of Colorado & Southern Ry.; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. K 1.)----- | 4, 468. 278 |
| Wheatland, 100 feet west of main railroad track, 1 block north of station, in stone foundation on east side of Wheatland Roller Mills, 20 feet from south end of building, 20 inches above ground, 10 inches below twenty-ninth brick of first course numbering from south end of building, 3 feet north of south wareroom door; copper bolt, marked "U. S. \oplus B. M." (C. & G. S. b. m. J 1.)----- | 4, 739. 209 |

CHUGWATER QUADRANGLE.

[Latitude 41° 30'-42°; longitude 104° 30'-105°.]

From point near Wheatland southeast and southwest along Colorado & Southern Railway to point 3 miles southwest of Diamond.

Feet.

| | |
|---|-------------|
| Wheatland, 6.7 miles south of, on right of way, 40 feet north of track, between first and second telegraph poles west of telegraph milepole 89, 50 feet west of first pole east of telegraph milepole 89; bottom of square hole in top of sandstone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. I 1)----- | 4, 723. 740 |
| Bordeaux, 3 miles south of, on right of way, 50 feet east of railroad track, between sixth and seventh telegraph poles north of milepole 81; bottom of square hole in top of sandstone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. H 1)----- | 4, 947. 441 |
| Chugwater, 2.5 miles north of, on right of way, 50 feet east of track, 15 feet south of milepole 73; bottom of square hole in top of sandstone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. G 1)----- | 5, 202. 254 |
| Diamond, 5.3 miles northeast of, on right of way, 50 feet east of track, in line of telegraph poles, 20 feet south of telegraph milepole 65; bottom of square hole in top of sandstone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. F 1)----- | 5, 472. 836 |

SINYLEE QUADRANGLE.

[Latitude 41° 30'-42°; longitude 105°-105° 30'.]

From point 3 miles southwest of Diamond southwest along Colorado & Southern Railway to point near Horse Creek.

| | |
|---|-------------|
| Diamond, 3 miles southwest of, on right of way, 50 feet east of railroad track, in line of telegraph poles, between ninth and tenth poles south of milepole 57; bottom of square hole in top of sandstone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. E 1)----- | 5, 786. 766 |
| Iron Mountain, 2.5 miles northeast of, on stone foundation of the more eastern of two north iron supports of water tank on Colorado & Southern Ry.; bottom of square hole, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. D 1)----- | 6, 141. 550 |
| Iron Mountain, 3.5 miles south of, in line of telegraph poles, about 30 feet south of telegraph milepole 42, 50 feet east of railroad track; bottom of square hole in top of sandstone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. C 1)----- | 6, 508. 746 |

CHEYENNE QUADRANGLE.

[Latitude 41°-41° 30'; longitude 104° 30'-105°.]

From point near Athol westerly along the Union Pacific Railroad to Otto.

| | |
|--|-------------|
| Athol, in northeast corner of yard to railroad section house; square cut in top of granite post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. A)----- | 6, 301. 484 |
| Cheyenne, inside the park north of main track and at its southwest corner, in top of stone foundation under west support of first pair of iron supports to city viaduct across Union Pacific R. R. yard; bottom of square cut, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. B)----- | 6, 060. 300 |
| Cheyenne, in upper surface of stone sill under west window in north side of brick carpenter shop (Union Pacific R. R. shops); bottom of square cut, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. C)----- | 6, 059. 680 |

| | Feet. |
|---|-------------|
| Cheyenne, in upper surface of stone sill under west window in north side of brick machine shop of Union Pacific R. R.; bottom of square cut, marked "U. S. \square B. M." (C. & G. S. b. m. D)----- | 6, 059. 555 |
| Borie, in top of granite post near southwest corner of railroad section house; square cut in top of granite post, marked "U. S. \square B. M." (C. & G. S. b. m. F)----- | 6, 007. 287 |

From Silver Crown east along Colorado & Southern Railway to Cheyenne.

| | |
|--|-------------|
| Silver Crown, in southwest stone pier of water tank on Colorado & Southern Ry., T. 14 S., R. 68 W.; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. Y)----- | 6, 402. 281 |
| Silver Crown, 4.5 miles east of, T. 14 S., R. 68 W., on right of way, 100 yards from North Crow Creek, in line of telegraph poles, 11 steps to right of track going northward, between eighth and ninth telegraph poles south of telegraph milepole 9 (from Cheyenne), 15 poles north of telegraph milepole 8 and 21 steps from nearest pole; bottom of square hole in top of sandstone post, marked "U. S. \square B. M." (C. & G. S. b. m. X)----- | 6, 284. 659 |

SHERMAN QUADRANGLE.

[Latitude 41°-41° 30'; longitude 105°-105° 30'.]

From Borie westerly along Union Pacific Railroad to Red Buttes.

| | |
|--|-------------|
| Otto, under railroad water tank, on stone under north iron support on east side of tank; bottom of square cut in upper surface of stone, marked "U. S. \square B. M." (C. & G. S. b. m. G)----- | 6, 953. 923 |
| Granite Canyon, on top of granite post near southwest corner of railroad section house; square cut marked "U. S. \square B. M." (C. & G. S. b. m. H)----- | 7, 313. 158 |
| Sherman, under railroad water tank, on stone under iron support at southwest corner of tank, in upper surface of stone; bottom of square cut, marked "U. S. \square B. M." (C. & G. S. b. m. I)----- | 8, 250. 325 |
| Sherman, in top of a foundation stone on east side of Ames monument near its northeast corner, stone is about 4 feet long and projects about 2 feet beyond edge of monument, its upper surface is about even with ground; bottom of square cut, marked "U. S. \square B. M." (C. & G. S. b. m. J)----- | 8, 281. 837 |
| Dale Creek, under railroad water tank, in top of stone under the western of two iron supports under north side of tank (nearest track) at northwest corner of stone; bottom of square cut, marked "U. S. \square B. M." (C. & G. S. b. m. K)----- | 8, 006. 605 |
| Dale Creek, in top of stone abutment at west end of iron railroad bridge over, south of railroad track; bottom of square cut, marked "U. S. \square B. M." (C. & G. S. b. m. L)----- | 8, 003. 616 |

From point near Horse Creek southeast along Colorado & Southern Railway to Silvercrown.

| | |
|---|-------------|
| Horse Creek, 1 mile west of, 10 feet west of second telegraph pole west of telegraph milepole 34, 50 feet north of railroad track, in top of sandstone post set 4 feet in ground; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. B 1)----- | 6, 513. 435 |
|---|-------------|

Feet.

| | |
|--|------------|
| Islay, 50 feet east of railroad track, in line of telegraph poles, 10 feet north of first pole south of station; bottom of square hole in top of sandstone post, marked "U. S. \square B. M." (C. & G. S. b. m. A 1)----- | 6,705. 244 |
| Volente, 1 mile northwest of, 10 feet north of telegraph pole 21, 60 feet east of railroad track, in a pasture owned by Mr. Arnold, 2 miles south of his ranch house; bottom of square hole in top of sandstone post, marked "U. S. \square B. M." (C. & G. S. b. m. Z)----- | 6,749. 82 |

LARAMIE QUADRANGLE.

[Latitude 41°-41° 30'; longitude 105° 30'-106°.]

From Red Buttes north along Union Pacific Railroad to Coopers Lake.

| | |
|---|------------|
| Red Buttes, under north end of elevated railroad track running through coal chutes, in top of stone foundation at east end; bottom of square cut, marked "U. S. \square B. M." (C. & G. S. b. m. M)----- | 7,304. 329 |
| Laramie, in north wall of basement to courthouse, in stone forming northwest corner of building, the stone above is marked "1871" on its western face and the water table upon which brick superstructure rests is one course above bolt; copper bolt (C. & G. S. b. m. N)----- | 7,166. 547 |
| Laramie, under iron railroad bridge over Laramie River, in top of stone pier on south bank of river, between iron superstructure and west rail; bottom of square cut, marked "U.S. \square B.M." (C. & G. S. b. m. O)----- | 7,133. 063 |
| Howell, near railroad section house, in top of granite post set in ground; square cut marked "U.S. \square B.M." (C. & G. S. b. m. P)--- | 7,104. 044 |
| Wyoming, under railroad water tank, in upper surface of stone under west one of two iron supports under north side of tank (nearest the side track), near northwest corner; bottom of square cut, marked "U.S. \square B.M." (C. & G. S. b. m. Q)----- | 7,079. 613 |

BOSLER QUADRANGLE.

[Latitude 41° 30'-42°; longitude 105° 30'-106°.]

From Coopers Lake northwest along Union Pacific Railroad to point near Aurora.

| | |
|---|------------|
| Coopers Lake, under railroad water tank, on stone base to the one nearest track of the two iron supports under west side of tank, in upper surface near southeast corner of stone next to top; bottom of square cut, marked "U. S. \square B. M." (C. & G. S. b. m. R)----- | 7,044. 822 |
| Lookout, on railroad right of way just inside of fence, west of public road, in front of railroad station, in top of granite post; square cut, marked "U.S. \square B.M." (C. & G. S. b. m. S)----- | 7,173. 826 |
| Harper, under railroad water tank, on surface of iron base of north one of two iron supports under west side (nearest the track) of tank, on flat projection nearest the track, near bolt which fastens down the column; cross mark (C. & G. S. b. m. T)----- | 7,010. 183 |
| Rock Creek, near, under Union Pacific R. R. bridge over Rock Creek, in top of stone pier north of creek and east of track; bottom of square cut, marked "U.S. \square B.M." (C. & G. S. b. m. U)----- | 6,705. 857 |

| | Feet. |
|--|-------------|
| Rock Creek, in front yard to residence of William Taylor, just inside front fence and in northeast corner, on top of southern of two granite posts; square cut marked "U.S.□B.M." (C. & G. S. b. m. V)----- | 6, 704. 724 |
| Rock Creek, in front yard to residence of William Taylor, just inside front fence and in northeast corner, on top of granite post to north of two; square cut marked "U.S.□B.M." (C. & G. S. b. m. W)--- | 6, 704. 921 |
| Wilcox, 2 miles west of, on small stone culvert under Union Pacific R. R., on south side of track, on east wing 8 inches from end of capstone; bottom of square hole, marked "U.S.□B.M." (C. & G. S. b. m. C 2)----- | 6, 923. 821 |

WIDOWFIELD QUADRANGLE.

[Latitude 41° 30'-42°; longitude 106°-106° 30'.]

From point 2 miles west of Aurora west along Union Pacific Railroad to Hanna.

| | |
|---|-------------|
| Aurora, 2 miles west of, 1.5 miles east of Ridge, on right of way opposite grade point of west end of second long fill east of Ridge, opposite a telegraph pole, 40 feet north of track, 10 feet south of wire fence; square hole in top of limestone post, marked "U. S.□B. M." (C. & G. S. b. m. D 2)----- | 6, 745. 899 |
| Medicine Bow, 50 yards east of station, on southeast corner of stone foundation under the eastern one of two northern iron columns supporting railroad water tank; square hole, marked "U.S.□B.M." (C. & G. S. b. m. E 2)----- | 6, 565. 758 |
| Medicine Bow, 24 rails west of station semaphore, opposite fifth telegraph pole west of station, 48 feet south of this pole and 171 feet south of main track; square hole in top of limestone post, marked "U. S.□B. M." (C. & G. S. b. m. F 2)----- | 6, 560. 498 |
| Allen, on right of way, 90 feet north of center of main track, 6 feet south of wire fence, 10 rails west of station sign, 63 feet west of west side of section house, in top of limestone post; bottom of square hole, marked "U.S.□B.M." (C. & G. S. b. m. G 2)----- | 6, 613. 583 |
| Como, 2.5 miles west of, on right of way, 36 feet south of track, 4 feet north of wire fence, 8½ rails west of small culvert, which is only one in vicinity, 150 yards west of small cut, which is only cut for several miles west of Como, in top of limestone post; bottom of square hole, marked "U. S.□B. M." (C. & G. S. b. m. H 2)----- | 6, 769. 196 |

FORT STEELE QUADRANGLE.

[Latitude 41° 30'-42°; longitude 106° 30'-107°.]

From Hanna westerly along Union Pacific Railroad to point 0.8 mile east of Greenville.

| | |
|---|-------------|
| Hanna, 425 meters east of water tank, on right of way, 90 feet north of center of main track, in line with telegraph poles, about half-way between first and second telegraph poles east of an angle in line of telegraph poles; bottom of square hole in top of stone post, marked "U. S.□B. M." (C. & G. S. b. m. I 2)----- | 6, 779. 360 |
| Hanna, east of station, on stone pier under eastern one of two northern columns supporting water tank, on southeastern corner of pier; bottom of square hole, marked "U. S.□B. M." (C. & G. S. b. m. J 2)----- | 6, 776. 161 |

- Dana, on right of way, 39 feet from center of main track at a point 1.5 rails east of east end of station; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. K 2)----- 6,
- Edson, at old station, on right of way, 84 feet north of center of main track, 16 feet south of wire fence, 14 rails east of most western switch stand, 23 rails west of section house, 26 rails west of station sign; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. L 2)----- 6,
- Walcott, 0.8 mile west of, south side of track, on stone facing of drain pipe, near center of capstone; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. M 2)----- 6,
- Fort Steele, under railroad water tank west of station, in southeast corner of stone foundation under eastern one of two southern iron columns supporting tank, bottom of square cut, marked "U. S. B. M." on east face of foundation just under bench mark (C. & G. S. b. m. N 2)----- 6,

RAWLINS QUADRANGLE.

[Latitude 41° 30'-42°; longitude 107°-107° 30'.]

From point 0.8 mile east of Greenville west along Union Pacific Railroad to point 1 mile east of Daley's ranch.

- Greenville, 0.8 mile east of, 100 yards south of Union Pacific R. R. track, in top of stone post set in ground; bronze triangulation tablet of the Geological Survey (C. & G. S. b. m., same as U. S. G. S. West Base triang. sta.)----- 6,
- Greenville, 0.5 mile east of, on south side of track, near west end of capstone of small culvert, the only stone culvert in this vicinity; square lettered "U. S. \square B. M." (C. & G. S. b. m. O 2)----- 6,
- Rawlins, on stone sill of northeast window of roundhouse; bottom of square, marked "U. S. \square B. M." (C. & G. S. b. m. P 2)----- 6,
- Rawlins, on northwest corner of Fourth and Cedar streets, on stone sill of a one-story stone building, 2 feet from southwest corner of sill and 8 inches above sidewalk; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. Q 2)----- 6,
- Rawlins, on county courthouse, in one of corner stones on west side, 11 inches from southwest corner and 5 feet above ground; copper bolt, marked "U. S. \oplus B. M." (C. & G. S. b. m. R 2)----- 6,
- Solon, 96 feet west of station platform, 48 feet south of center of main track, 12 feet south of fence, 2 rails east of east switch stand for south siding, between third and fourth telegraph poles east of new section house; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. S 2). (Note.—The station has been moved about 100 yards west and to opposite (north) side of track, 1902)----- 6,

CRESTON QUADRANGLE.

[Latitude 41° 30'-42°; longitude 107° 30'-108°.]

From point 1 mile east of Daley's ranch westerly along Union Pacific Railroad to point 1 mile east of Red Desert.

- Daley's ranch, 1 mile east of, on south side of track, on east abutment of small deck plate-girder bridge, 1 foot from end of abutment; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. T 2)----- 6,

Feet.

| | |
|--|-------------|
| Riner, 40 feet south of center of main track, 5 feet north of wire fence, 20½ rails west of west end of station, 11½ rails west of west water tank, 1½ rails east of west switch stand, just east of a cut; bottom of square hole in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. U 2)----- | 6, 757. 207 |
| Fillmore, on right of way, at west end of small cut, 3 rails east of station sign and about 9 rails west of first switch stand east of station sign, 43 feet south of center of main track, 7 feet north of railroad fence, in line with telegraph poles; bottom of square hole in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. V 2)----- | 6, 977. 728 |
| Creston, 6 rails west of west end of station, 46 feet south of center of main track, 4 feet north of railroad fence, 6 feet south of line of telegraph poles, and directly behind a sign marked "Divide of the Continent, Elevation 7,014 feet"; bottom of square hole in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. W 2)----- | 7, 110. 032 |
| Latham, 0.5 mile west of, 10 rails east of a semaphore, on top of stone facing of only drainpipe in vicinity, on south side of track, on east wing wall 8 inches from southeast corner of capstone; bottom of square hole, marked "U. S. □ B. M." (C. & G. S. b. m. X 2)----- | 6, 928. 684 |
| Wamsutter, under railroad water tank, on northeastern corner of stone foundation, under more southern of two eastern columns; letters "U. S. B. M." are cut on east face of stone just under bench mark (C. & G. S. b. m. Y 2)----- | 6, 709. 081 |

FREWEN QUADRANGLE.

[Latitude 41° 30'–42°; longitude 108°–108° 30'.]

From point 1 mile east of Red Desert westerly along Union Pacific Railroad to Bittercreek.

| | |
|--|-------------|
| Red Desert, 1 mile east of, on right of way of Union Pacific R. R., about 4½ rails east of beginning of first curve east of station, 15½ rails west of station whistle post, 38 feet south of track, 8 feet north of fence; bottom of square hole in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. Z 2)----- | 6, 730. 128 |
| Red Desert, 0.5 mile east of, on east abutment of a through plate-girder bridge, a few inches from south end, on a stone projecting from under retaining wall; bottom of square hole, marked "U. S. □ B. M." (C. & G. S. b. m. A 3)----- | 6, 723. 550 |
| Red Desert, 213 feet north of main track, 45 feet west of prolongation of west wall of station, 135 feet north of fence; bottom of square hole in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. B 3)----- | 6, 719. 508 |
| Tipton, 75 feet north of center of main tracks, in line with west end of station; bottom of square hole in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. C 3)----- | 6, 997. 935 |
| Table Rock, 1 mile east of, on first deck plate-girder bridge east of Table Rock, 4½ telegraph poles west of milepole 773, on south end of east concrete abutment; square hole marked "U. S. □ B. M." (C. & G. S. b. m. D 3)----- | 6, 851. 154 |
| Monell, near; spike in milepost (C. & G. S. b. m. "U. P. 779")----- | 6, 750. 522 |
| Monell, directly opposite station sign, 12 feet west of second telegraph pole east of milepole 779½, 42 feet south of main track; bottom of square hole in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. E 3)----- | 6, 748. 618 |

CHUGWATER QUADRANGLE

[Latitude 41° 30'–42°; longitude 104°]

From point near Wheatland southeast and southwest
ern Railway to point 3 miles southwest

Wheatland, 6.7 miles south of, on right of way
between first and second telegraph poles west
89, 50 feet west of first pole east of telegraph
square hole in top of sandstone post, marked
(C. & G. S. b. m. I 1)-----

Bordeaux, 3 miles south of, on right of way,
track, between sixth and seventh telegraph
81; bottom of square hole in top of sandstone
□ B. M." (C. & G. S. b. m. H 1)-----

Chugwater, 2.5 miles north of, on right of way,
15 feet south of milepole 73; bottom of square
stone post, marked "U. S. □ B. M." (C. & G. S. b. m. F 1)-----

Diamond, 5.3 miles northeast of, on right of way,
in line of telegraph poles, 20 feet south of
bottom of square hole in top of sandstone
B. M." (C. & G. S. b. m. F 1)-----

SIBYLEE QUADRANGLE

[Latitude 41° 30'–42°; longitude 104°]

From point 3 miles southwest of Diamond southwest
ern Railway to point near Horse

Diamond, 3 miles southwest of, on right of way,
road track, in line of telegraph poles, between
south of milepole 57; bottom of square hole in
post, marked "U. S. □ B. M." (C. & G. S. b. m. D 1)-----

Iron Mountain, 2.5 miles northeast of, on right of way,
more eastern of two north iron supports of
& Southern Ry.; bottom of square hole, marked
(C. & G. S. b. m. D 1)-----

Iron Mountain, 3.5 miles south of, in line of way,
feet south of telegraph milepole 42, 50 feet
bottom of square hole in top of sandstone
B. M." (C. & G. S. b. m. C 1)-----

CHEYENNE QUADRANGLE

[Latitude 41°–41° 30'; longitude 104°]

From point near Athol westerly along the Union

Athol, in northeast corner of yard to railroad
cut in top of granite post, marked "U. S. □ B. M. A)"-----

Cheyenne, inside the park north of main track
corner, in top of stone foundation under
of iron supports to city viaduct across Union
bottom of square cut, marked "U. S. □ B. M." (C. & G. S. b. m. C 1)-----

Cheyenne, in upper surface of stone sill under
side of brick carpenter shop (Union Pacific)
of square cut, marked "U. S. □ B. M." (C. & G. S. b. m. C 1)-----

Feet.

| | |
|---|-----------|
| 8 inches from pillar at north of ground; copper bolt (S)----- | 6,277.136 |
| building, on north side, west of north entrance, 6 above and to left of first copper bolt marked "U. S. □" | 3,289.410 |
| "U. P. 835")----- | 6,219.843 |

ANGLE.

109° 15'–109° 30'.]

Pacific Railroad to point near

| | |
|---|-----------|
| east side of pump house, with telegraph poles; bot- tom, marked "U. S. □ R. M." | 6,202.475 |
| "U. P. 830")----- | 6,183.656 |
| R. R. park, about equi- distant 12 feet from fence; bot- tom, marked "U. S. □ B. M." | 6,087.609 |
| county courthouse, 4 feet surface of ground; copper bolt, m. R 3)----- | 6,110.516 |
| Brewing Co.'s stone office corner, 4 feet from ground; bottom, m. B. M." (C. & G. S. b. m.) | 6,098.587 |
| bridge over Green River, on north end; bottom of square hole. bottom, m. T 3)----- | 6,088.233 |

ANGLE.

109° 30'–110°.]

Pacific Railroad to point near

| | |
|--|-----------|
| telegraph poles east of office of track, 5 feet from railroad bottom of square hole in top of (C. & G. S. b. m. U 3)----- | 6,370.131 |
| poles east of C signpost, 3 rails between eighth and ninth telegraph poles north of railroad track, 30 feet square hole in top of stone post, bottom, m. V 3)----- | 6,183.134 |
| telegraph poles west of milepole 863, of Union Pacific R. R. bridge retaining wall, 8 inches from north end; bottom of square hole, m. G. S. b. m. W 3)----- | 6,180.073 |

ALMOND QUADRANGLE.

[Latitude 41° 30'-42°; longitude 108° 30'-109°.]

| From Bittercreek westerly along Union Pacific Railroad to point near Baxter. | Feet. |
|--|-------------|
| Bittercreek, in station park, 18 feet from south fence, 18 feet from east fence, 2 rails west of west end of station, 53 feet north of center of main track; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. F 3)----- | 6, 606. 004 |
| Black Buttes, 2 miles east of, 2 telegraph poles east of half-mile post 791½, on a through plate-girder bridge, on south side of east wall, on top of stone extending from under retaining wall; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. G 3)----- | 6, 630. 210 |
| Black Buttes; spike in milepost (C. & G. S. b. m. "U. P. 793")----- | 6, 617. 890 |
| Hallville, directly opposite milepole 799, 100 yards west of section house, 4 rails east of car house, 78 feet south of center of main track, 34 feet south of fence; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. H 3)----- | 6, 557. 319 |
| Hallville, spike in milepost (C. & G. S. b. m. "U. P. 799")----- | 6, 558. 097 |
| Point of Rocks, near; spike in milepost (C. & G. S. b. m. "U. P. 804")----- | 6, 514. 002 |
| Point of Rocks, 1 mile west of, between fourth and fifth telegraph poles west of milepole 805½, 4 rails west of station whistle post and 7 rails east of a small trestle at point of curvature of first curve west of Point of Rocks, 45 feet north of track and 8 feet south of fence; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. I 3)----- | 6, 510. 374 |
| Point of Rocks, near; spike in milepost (C. & G. S. b. m. "U. P. 810")----- | 6, 459. 672 |
| Salt Wells, 2 miles east of, 9 rails west of milepole 814½, which also marks the junctions of secs. 45 and 46, near middle of first curve east of Salt Wells, 75 feet south of center track; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. J 3)----- | 6, 398. 875 |

ROCK SPRINGS QUADRANGLE.

[Latitude 41° 30'-41° 45'; longitude 109°-109° 15'.]

| From point near Baxter westerly along Union Pacific Railroad to point near Wilkins. | |
|---|-------------|
| Baxter, near; spike in milepost (C. & G. S. b. m. "U. P. 823")----- | 6, 302. 192 |
| Baxter, 5 rails west of telegraph station, 1 rail east of third telegraph pole east of mile pole 823½, 132 feet south of main track; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. K 3)----- | 6, 306. 900 |
| Rock Springs, north side of station, in water table, 22 inches above surface of ground, 22 inches from northwest corner of bay window; square cut lettered "U. S. \square B. M." (C. & G. S. b. m. L 3)----- | 6, 285. 719 |
| Rock Springs, in west end of Union Pacific Railroad park, west of passenger station, 12 feet from west fence, in line with three hydrants of park; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. M 3)----- | 6, 262. 930 |

| | Feet. |
|--|-------------|
| Rock Springs, in stone wall of City Hall, 6 inches from pillar at north side of west entrance, 4 feet above surface of ground; copper bolt marked "U. S. \square B. M." (C. & G. S. b. m. N 3)----- | 6, 277. 186 |
| Rock Springs, in stone wall of high-school building, on north side, 40 feet west of northeast corner, 6 feet west of north entrance, 6 feet above surface of ground, 16 inches above and to left of first window sill west of north entrance; copper bolt marked "U. S. \square B. M." (C. & G. S. b. m. O 3)----- | 3, 289. 410 |
| Ab Say; spike in milepost (C. & G. S. b. m. "U. P. 835")----- | 6, 219. 843 |

TABLE MOUNTAIN QUADRANGLE.

[Latitude 41° 30'–41° 45'; longitude 109° 15'–109° 30'.]

From point near Wilkins westerly along Union Pacific Railroad to point near Peru.



| | |
|--|-------------|
| Wilkins, 1.8 miles east of. 15 rails east of east side of pump house, 45 feet south of center of track, in line with telegraph poles; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. P 3)----- | 6, 202. 475 |
| Wilkins; spike in milepost (C. & G. S. b. m. "U. P. 830")----- | 6, 183. 656 |
| Green River, in west end of Union Pacific R. R. park, about equidistant from north and south sides and 12 feet from fence; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. Q 3.)----- | 6, 087. 609 |
| Green River, in sandstone water table of county courthouse, 4 feet north of southeast corner, 4 feet above surface of ground; copper bolt marked "U. S. \square B. M." (C. & G. S. b. m. R 3)----- | 6, 119. 516 |
| Green River, in west wall of Sweetwater Brewing Co.'s stone office and saloon, 16 inches from southwest corner, 4 feet from ground; copper bolt lettered beneath bolt "U. S. B. M." (C. & G. S. b. m. S. 3)----- | 6, 098. 587 |
| Green River, on Union Pacific R. R. bridge over Green River, on south end of middle red-sandstone pier; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. T 3)----- | 6, 068. 233 |

GRANGER QUADRANGLE.

[Latitude 41° 30'–42°; longitude 109° 30'–110°.]

From point near Peru westerly along Union Pacific Railroad to point near Granger.

| | |
|--|-------------|
| Peru, near, between sixth and seventh telegraph poles east of office pole at Peru, 45 feet south of center of track, 5 feet from railroad fence, 5 feet from crossing fence; bottom of square hole in top of stone post marked "U. S. \square B. M." (C. & G. S. b. m. U 3)----- | 6, 370. 131 |
| Bryan, 2 miles west of, 2 telegraph poles east of C signpost, 3 rails east of small stone culvert, between eighth and ninth telegraph poles west of milepole 860, 70 feet north of railroad track, 30 feet south of railroad fence; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. V 3)----- | 6, 183. 134 |
| Bryan and Marston, between, 4 telegraph poles west of milepole 863, at north end of sandstone abutment of Union Pacific R. R. bridge over Black River, on top of stone retaining wall, 8 inches from west side of stone and 6 inches from north end; bottom of square hole, marked "U. S. \square B. M." (C. & G. S. b. m. W 3)----- | 6, 180. 073 |

| | |
|--|--|
| Marston, 2.1 miles west of, 1.4 miles east of Azusa, 10 feet south of fourth telegraph pole west of milepole 868, 3 poles west of station sign for Azusa, 55 feet south of track, 45 feet from railroad fence; bottom of square hole in top of stone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. X 3)----- | 6, 241.  |
| Azusa, 1.2 miles west of, 4.8 miles east of Granger, on north end of red sandstone retaining wall of Union Pacific R. R. bridge over Black River, in top of stone, 10 inches from east edge and 10 inches from capstone; bottom of square hole, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. Y 3)----- | 6, 225.  |
| Granger, 100 paces north of main tracks, opposite a point 40 paces west of west water tank; bottom of square hole in top of red sandstone post, marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. P 6)----- | 6, 240. 217 |
| Granger, on first iron bridge west of, over Black Fork, in northeast red-sandstone abutment; square cut on shelf about 1 foot below track level (C. & G. S. b. m. O 6)----- | 6, 271. 759 |

OPAL QUADRANGLE.

[Latitude 41° 30'-42°; longitude 110°-110° 30'.]

From point near Granger southwest along Union Pacific Railroad to Elkhurst.

| | |
|--|-------------|
| Garrett, directly opposite station sign, 200 feet north of tracks, about halfway between tracks and fence; bottom of square hole in top of red-sandstone post marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. N 6)----- | 6, 342. 950 |
| Church Buttes; square cut in south-southwest base stone of water tank (C. & G. S. b. m. M 6)----- | 6, 353. 741 |
| Church Buttes, southwest of station, 4 feet south of second telegraph pole west of station, 100 feet south of Union Pacific R. R. tracks; bottom of square hole in top of red-sandstone post marked "U. S. <input type="checkbox"/> B. M." (C. & G. S. b. m. L 6)----- | 6, 350. 532 |
| Hampton, 1.7 miles west of, in south arch of stone culvert; square cut on top of southwest corner (C. & G. S. b. m. K 6)----- | 6, 403. 222 |

BRIDGER QUADRANGLE.

[Latitude 41°-41° 30'; longitude 110°-110° 30'.]







From point near Elkhurst southwest along Union Pacific Railroad to point near Carter.

| | |
|---|-------------|
| Elkhurst, in Union Pacific R. R. right of way, 150 feet north of tracks and at a deflection angle of 45° with tracks from a point at east switch of siding; bottom of square hole in top of red-sandstone post, marked "U.S. <input type="checkbox"/> B.M." (C. & G. S. b. m. J 6)----- | 6, 428. 491 |
| Carter, on west side of roadway leading up hill, 400 feet north of Union Pacific R. R. tracks, 5 feet west of telephone pole; bottom of square hole in top of red-sandstone post, marked "U.S. <input type="checkbox"/> B.M." (C. & G. S. b. m. I 6)----- | 6, 502. 490 |
| Carter, west of station and opposite milepole 904; square cut in south-southeast base stone of water tank (C. & G. S. b. m. H 6)--- | 6, 499. 876 |

EVANSTON QUADRANGLE.

[Latitude 41°-41° 30'; longitude 110° 30'-111°.]

From point near Carter southwesterly and northwesterly along Union Pacific Railroad to Evanston.

| | Feet. |
|---|-----------|
| Bridger, 3 miles east of, in culvert at milepole 911; square cut in top stone on arch north of track (C. & G. S. b. m. G 6)----- | 6,582.155 |
| Bridger, 200 feet northwest of milepole 914, in right of way, 80 feet north of Union Pacific R. R. tracks and north of station sign, 6 feet from fence; bottom of square hole in top of red-sandstone post, marked "U.S.  B.M." (C. & G. S. b. m. F 6)----- | 6,629.855 |
| Leroy, 200 yards east of section house, in Union Pacific R. R. right of way, south of tracks, 2 feet from fence and nearly opposite roadway which leads up hill on other side of tracks; bottom of square hole in top of red-sandstone post, marked "U.S.  B.M." (C. & G. S. b. m. E 6)----- | 6,694.856 |
| Spring Valley, 100 feet west of water tank, 40 feet north of Union Pacific R. R. tracks; bottom of square hole in top of red-sandstone post, marked "U.S.  B.M." (C. & G. S. b. m. D 6)----- | 7,012.420 |
| Altamont, near west entrance of the "Aspen Tunnel," 100 yards south of tracks, opposite a point on tracks halfway between station and section house, near right-of-way fence; bottom of square hole in top of red-sandstone post, marked "U.S.  B.M." (C. & G. S. b. m. C 6)----- | 7,219.790 |
| Knight, 100 yards east of station and in line with front of section house, 150 paces south of mail stand and Union Pacific R. R. tracks; bottom of square hole in top of red-sandstone post, marked "U.S.  B.M." (C. & G. S. b. m. B 6)----- | 7,002.341 |
| Evanston, in stone corner post on southeast corner of station, in east face, a few inches from corner, 4 feet from ground; copper belt, marked  (C. & G. S. b. m. A. 6)----- | 6,749.052 |

APPENDIX B.

SECONDARY ELEVATIONS.

Secondary elevations from records and topographic maps of the United States Geological Survey, including vertical-angle bench marks, altitudes of well-known summits, water-surface elevations of prominent lakes, and other useful elevations, are given below. They are approximate only and should not be used for accurate work.

| Locality. | Quadrangle. | County. | Elevation. |
|--|-------------------------|--------------------------------|------------|
| Alkali Lake, water surface..... | Laramie..... | Albany..... | 6,900 |
| Ames Monument..... | Sherman..... | do..... | 8,283 |
| Arrow Mountain..... | Fremont Peak..... | Fremont..... | 10,046 |
| Bald Mountain..... | Bald Mountain..... | Big Horn..... | 10,041 |
| Blackbank Hill triangulation station..... | Devils Tower..... | Crook..... | 4,008 |
| Black Mountain..... | Kirwin..... | Fremont..... | 10,168 |
| Black Mountain triangulation station..... | Dayton..... | Sheridan..... | 9,422 |
| Blacktail Butte triangulation station..... | Grand Teton..... | Lincoln..... | 7,678 |
| Breccia Peak..... | Mount Leidy..... | Teton National Forest..... | 11,007 |
| Bridge Peak triangulation station..... | Encampment special..... | Carbon..... | 11,007 |
| Burnt Mountain..... | Mount Leidy..... | Teton National Forest..... | 9,879 |
| Cedar Mountain..... | Fort Steele..... | Carbon..... | 10,026 |
| Chimney Rock..... | Fremont Peak..... | Fremont..... | 12,240 |
| Cloud Peak triangulation station..... | Cloud Peak..... | Big Horn-Johnson..... | 12,148 |
| Columbus Peak triangulation station..... | Dayton..... | Sheridan..... | 8,394 |
| Corner Mountain..... | Medicine Bow..... | Albany..... | 9,822 |
| Corner Peak..... | Gros Ventre..... | Lincoln..... | 11,080 |
| Cottonwood Peak..... | Kirwin..... | Big Horn..... | 20,000 |
| County Peak..... | do..... | do..... | 12,115 |
| Crescent Mountain..... | Younts Peak..... | Big Horn-Fremont..... | 11,376 |
| Crow Creek Hill triangulation station..... | Sherman..... | Albany..... | 8,877 |
| Crystal Peak..... | Gros Ventre..... | Lincoln..... | 11,087 |
| Darwin Peak triangulation station..... | do..... | do..... | 11,645 |
| Dead Indian Peak..... | Crandall..... | Shoshone National Forest..... | 12,383 |
| Devils Tower..... | Devils Tower..... | Crook..... | 5,117 |
| Dome Mountain..... | Kirwin..... | Big Horn..... | 12,433 |
| Dome Peak..... | Fremont Peak..... | Fremont..... | 11,210 |
| Dome Rock..... | Dayton..... | Sheridan..... | 9,187 |
| Doubletop Peak..... | Gros Ventre..... | Lincoln..... | 11,715 |
| Downs Mountain triangulation station..... | Fremont Peak..... | Fremont..... | 12,344 |
| Dunoon Mountain..... | Bald Mountain..... | Big Horn-Sheridan..... | 9,810 |
| East Tensleep Lake, water surface..... | Cloud Peak..... | Big Horn..... | 9,736 |
| Elkhorn Point..... | Medicine Bow..... | Carbon..... | 8,612 |
| Elk Mountain..... | Fort Steele..... | do..... | 11,162 |
| Elk Ridge..... | Gros Ventre..... | Lincoln..... | 10,170 |
| Encampment..... | Encampment Special..... | Carbon..... | 7,322 |
| Fish Lake Peak..... | Younts Peak..... | Fremont..... | 10,086 |
| Fortress Mountain..... | Ishawooa..... | Shoshone National Forest..... | 12,073 |
| Franks Peak..... | Kirwin..... | Big Horn..... | 12,140 |
| Freezeout Point triangulation station..... | Dayton..... | Sheridan..... | 8,300 |
| Fremont Peak..... | Fremont Peak..... | Fremont..... | 12,730 |
| Gannett Peak..... | do..... | do..... | 12,785 |
| Grand Teton..... | Grand Teton..... | Lincoln..... | 12,747 |
| Gravel Mountain..... | Mount Leidy..... | Teton National Forest..... | 9,645 |
| Green River Pass..... | Fremont Peak..... | Fremont..... | 12,322 |
| Greentop Mountain triangulation station..... | Sherman..... | Albany..... | 8,108 |
| Hard Luck Mountain..... | Younts Peak..... | Big Horn..... | 11,788 |
| Heart Lake, water surface..... | Lake..... | Yellowstone National Park..... | 7,400 |
| Hodges Peak..... | Gros Ventre..... | Lincoln..... | 11,120 |
| Horse Mountain triangulation station..... | Sherman..... | Albany..... | 7,800 |
| Hunt Mountain..... | Bald Mountain..... | Big Horn..... | 10,151 |
| Hutton Lake, water surface..... | Laramie..... | Albany..... | 7,180 |
| Index Peak triangulation station..... | Crandall..... | Big Horn..... | 11,740 |
| Indian Pass..... | Fremont Peak..... | Fremont..... | 12,130 |
| Indian Peak..... | Crandall..... | Shoshone National Forest..... | 10,020 |
| Inyankara Mountain..... | Sundance..... | Crook..... | 6,313 |
| Ishawooa Cone..... | Ishawooa..... | Shoshone National Forest..... | 11,840 |
| Ishawooa Pass..... | do..... | do..... | 11,840 |

| Locality. | Quadrangle. | County. | Elevation. |
|--|--------------------------------|--------------------------------|------------|
| Jackson Lake, water surface..... | Grand Teton..... | Lincoln..... | 6,736 |
| James Lake, water surface..... | Laramie..... | Albany..... | 7,218 |
| Jelm Mountain triangulation station..... | do..... | do..... | 9,668 |
| Jenny Lake, water surface..... | Grand Teton..... | Lincoln..... | 6,775 |
| Klondike Lake, water surface..... | Fremont Peak..... | Fremont..... | 11,201 |
| Knife Point Mountain..... | do..... | do..... | 13,007 |
| Lake Mountain..... | Medicine Bow..... | Albany..... | 9,760 |
| Lake Solitude, water surface..... | Cloud Peak..... | Big Horn..... | 9,375 |
| Lewis Lake, water surface..... | Shoshone..... | Yellowstone National Park..... | 7,720 |
| Little Bald Mountain..... | Bald Mountain..... | Big Horn-Sheridan..... | 9,894 |
| Little Goose Peak..... | Dayton..... | Johnson..... | 9,334 |
| Little Sheep Mountain triangulation station..... | Fremont Peak..... | Fremont..... | 10,178 |
| Lone Sand Hill..... | Patrick..... | Laramie..... | 4,930 |
| Medicine Bow Peak..... | Medicine Bow..... | Albany..... | 12,005 |
| Medicine Mountain..... | Bald Mountain..... | Big Horn..... | 9,966 |
| Missouri Buttes triangulation station..... | Devils Tower..... | Crook..... | 5,372 |
| Mount Mountain..... | Sherman..... | Albany..... | 7,886 |
| Mount Crosby triangulation station..... | Kirwin..... | Big Horn..... | 12,436 |
| Mount Helen..... | Fremont Peak..... | Fremont..... | 13,600 |
| Mount Kent..... | Kirwin..... | do..... | 11,000 |
| Mount Laidy..... | Mount Laidy..... | Teton National Forest..... | 10,317 |
| Mount Lester..... | Fremont Peak..... | Fremont..... | 12,326 |
| Mount Steele..... | Fort Steele..... | Carbon..... | 7,548 |
| Needle Mountain..... | Ishawooa..... | Shoshone National Forest..... | 12,130 |
| Palmer Peak..... | Gros Ventre..... | Lincoln..... | 11,400 |
| Parkview Hill..... | Medicine Bow..... | Carbon..... | 8,460 |
| Pass Peak..... | Gros Ventre..... | Lincoln..... | 9,910 |
| Phelps Lake, water surface..... | Grand Teton..... | do..... | 6,632 |
| Pinnacle Butte..... | Younts Peak..... | Fremont..... | 11,474 |
| Pollux Peak..... | Crandall..... | Shoshone National Forest..... | 11,081 |
| Prospect Mountain..... | Medicine Bow..... | Carbon..... | 8,430 |
| Pyramid Peak..... | Gros Ventre..... | Lincoln..... | 11,087 |
| Ragwort Mountain..... | Younts Peak..... | Big Horn-Fremont..... | 11,848 |
| Ragwort Mountain triangulation station..... | Sherman..... | Albany..... | 8,280 |
| Ramhorn Peak triangulation station..... | Younts Peak..... | Fremont..... | 11,626 |
| Red Peak..... | Kirwin..... | do..... | 8,132 |
| Red Tops..... | Younts Peak..... | Big Horn..... | 12,202 |
| Ring Mountain triangulation station..... | Laramie..... | Albany..... | 8,805 |
| Saddle Mountain..... | Crandall..... | Shoshone National Forest..... | 10,678 |
| St. Mary Peak..... | Fort Steele..... | Carbon..... | 7,496 |
| Sheephead Mountain..... | do..... | do..... | 8,700 |
| Sheep Mountain..... | Bald Mountain..... | Big Horn-Sheridan..... | 9,837 |
| Sheep Mountain triangulation station..... | Grand Teton..... | Lincoln..... | 11,190 |
| Sheep Mountain..... | Laramie..... | Albany..... | 9,560 |
| do..... | Medicine Bow..... | do..... | 9,560 |
| Sheep Mountain triangulation station..... | Encampment Special..... | Carbon..... | 8,319 |
| do..... | Fremont Peak..... | Fremont..... | 11,606 |
| Shoshone Pass..... | Younts Peak..... | do..... | 9,730 |
| Spoon Butte..... | Patrick..... | Laramie..... | 5,008 |
| Squaretop Mountain..... | Fremont Peak..... | Fremont..... | 11,679 |
| Sublette Ridge..... | Montpelier..... | Lincoln..... | 9,314 |
| Sundance..... | Sundance..... | Crook..... | 4,760 |
| Sunlight Peak..... | Crandall..... | Shoshone National Forest..... | 11,977 |
| Tazart Lake, water surface..... | Grand Teton..... | Lincoln..... | 6,915 |
| Teton Pass Mountain..... | do..... | do..... | 10,345 |
| Thorburn Buttes..... | Ishawooa..... | Shoshone National Forest..... | 11,417 |
| Three Sisters..... | Cloud Peak..... | Johnson..... | 10,307 |
| Trail Peak triangulation station..... | Gros Ventre..... | Lincoln..... | 10,399 |
| Triangle Peak..... | do..... | do..... | 10,545 |
| Trout Peak triangulation station..... | Crandall..... | Big Horn..... | 11,370 |
| Twin Mountains..... | Sherman..... | Laramie..... | 12,259 |
| Wall Mountain..... | Younts Peak..... | Big Horn..... | 8,145 |
| Westkie Needles..... | Kirwin..... | do..... | 11,498 |
| West Thumb Lake, water surface..... | Cloud Peak..... | do..... | 12,406 |
| Whisky Mountain..... | Fremont Peak..... | Fremont..... | 9,042 |
| Wiggins Peak triangulation station..... | Kirwin..... | do..... | 11,096 |
| Windy Mountain..... | Crandall..... | Shoshone National Forest..... | 12,160 |
| Yellowstone Lake, water surface..... | Canyon..... | Yellowstone National Park..... | 10,275 |
| do..... | Yellowstone National Park..... | do..... | 7,741 |
| Yellowstone Lake, West Thumb, water surface..... | do..... | do..... | 7,741 |
| Younts Peak..... | Younts Peak..... | Big Horn..... | 12,166 |



INDEX.

| A. | Page. | | Page. |
|-------------------------------------|------------------|-------------------------------|--------------------|
| Ah Say..... | 135 | Beach, C. W., work of..... | 68 |
| Aladdin quadrangle..... | 41, 42 | Bear Creek basin..... | 20 |
| Alamo..... | 64 | Bear Cub Pass..... | 85 |
| Albany County..... | 7, 17 | Bear River..... | 114, 117 |
| Aloosa..... | 33 | Beaver Creek..... | 43, 47, 112 |
| Aloosa quadrangle..... | 32 | Beaver Creek fork..... | 113 |
| Alger..... | 125 | Beckton..... | 58 |
| Alkali Butte..... | 47 | Belle Fourche River..... | 42, 43, 44, 121 |
| Alkali Creek..... | 64, 75 | Bellknap Creek..... | 74 |
| Alkalie Lake..... | 40 | Bennett..... | 19 |
| Allen..... | 131 | Bethorn schoolhouse..... | 67 |
| Allen ranch..... | 64 | Benlah..... | 42 |
| Allender's ranch..... | 46 | Big Creek ranch..... | 19 |
| Almond quadrangle..... | 96, 97, 119, 124 | Bigelow's ditch..... | 115 |
| Alta..... | 92 | Big Gate..... | 76 |
| Altamont..... | 137 | Big Goose Creek..... | 58 |
| Alva..... | 43 | Biggs, L. F., work of..... | 109 |
| Anderson Island..... | 108 | Bighorn..... | 65 |
| Antelope Springs..... | 77 | Big Horn County..... | 51, 68, 94 |
| Antelope triangulation station..... | 21 | Bighorn Mountains..... | 58 |
| A ranch..... | 68 | Bighorn River..... | 64, 92 |
| Arno..... | 67, 125 | Big Muddy..... | 34 |
| Arvada..... | 124 | Big Red..... | 66 |
| Arvada quadrangle..... | 119, 123 | Big Sandy Creek..... | 98, 104 |
| Aspen..... | 115 | Big Springs..... | 58 |
| Aspen Mountains quadrangle..... | 108, 109 | Bingham..... | 57 |
| Athol..... | 11, 128 | Bittercreek..... | 134 |
| Atlantic City..... | 103 | Bitter Creek Valley..... | 111 |
| Auburn..... | 118 | Black Buttes..... | 98, 134 |
| Austin Creek..... | 38 | Black Fork..... | 115, 136 |
| Asusa..... | 126 | Black Hill..... | 45 |
| | | Black River..... | 135, 136 |
| B. | | Blackrock Creek..... | 85 |
| Bacon Creek..... | 84 | Blackrock meadows..... | 85 |
| Badger Creek..... | 67 | Blair's ranch..... | 14 |
| Bad Lands..... | 65 | Blondes ranch..... | 72 |
| Badlands quadrangle..... | 96, 98 | Bonanza..... | 63 |
| Baggs..... | 40 | Bonnie Rodgers coal mine..... | 62 |
| Baggs quadrangle..... | 39 | Borie..... | 129 |
| Baird's ranch..... | 48 | Bosler quadrangle..... | 119, 130 |
| Baker's ranch..... | 16, 33, 66, 85 | Bowlder..... | 104 |
| Bald Mountain..... | 52 | Brennagans Springs, Colo..... | 14 |
| Bald Mountain City..... | 52 | Bridger..... | 127 |
| Bald Mountain quadrangle..... | 51 | Bridger quadrangle..... | 108, 111, 119, 136 |
| Bale's ranch..... | 56 | Bright, M. S., work of..... | 7, 82 |
| Ball..... | 99 | Brock's ranch..... | 67 |
| Ballinger, C. J., work of..... | 25 | Brokenback Creek..... | 55 |
| Banner..... | 65 | Brook's ranch..... | 109, 110 |
| Barnard, E. C., work of..... | 5 | Browns Canyon..... | 40 |
| Barber's ranch..... | 46 | Brown's ranch..... | 82, 88 |
| Basin..... | 86 | Brush Creek..... | 25 |
| Bates Creek..... | 35 | Bryan..... | 126 |
| Battle..... | 17 | Buckhorn..... | 127 |
| Battle Creek..... | 18 | Buffalo..... | 59 |
| Baxter..... | 124 | Buffalo Creek..... | 64, 94 |

| | Page. | | Page. |
|--|-----------------------------------|--|------------------|
| Buffalo Ford..... | 77, 78, 85 | Colorado Colony ranch..... | 65 |
| Buffalo Fork of Snake River..... | 85 | Colorado-Wyoming State line..... | 15 |
| Buiford..... | 14 | Condict's, W. ranch..... | 19 |
| Bull Camp..... | 61 | Conrad's ranch..... | 63 |
| Bull Camp mining district..... | 61 | Continental Divide..... | 15, 77 |
| Bull Creek..... | 61, 74 | Converse County..... | 32, 35, 119 |
| Bull Lake Creek..... | 83 | Cookston's, Joe, ranch..... | 102 |
| Bullock's ranch..... | 112 | Coopers Lake..... | 120 |
| Burlingham's, John, ranch..... | 94 | Copperton..... | 17 |
| Burlington..... | 85 | Copps ranch..... | 66 |
| Burnett's ranch..... | 59 | Cora..... | 105 |
| Burns ranch..... | 67 | Corbett..... | 75 |
| Burntfork..... | 117 | Cottonwood Creek..... | 85 |
| Bush's ranch..... | 44 | Coughlin ranch..... | 21 |
| C. | | County Road triangulation station..... | 21 |
| Cabin Creek..... | 45 | Craig Creek..... | 74 |
| Cadiz..... | 124 | Crawfort's ranch..... | 47 |
| Caldwell, H. C., work of..... | 7 | Crazy Woman Creek..... | 39, 69 |
| Cambria..... | 49 | Creston..... | 123 |
| Campbell's ranch..... | 38 | Creston quadrangle..... | 119, 123 |
| Camp Douglas..... | 25 | Crook County..... | 41, 119 |
| Canyon Creek..... | 38, 54 | Cross Anchor reservoir..... | 46 |
| Carbon County..... | 17, 28, 32, 39, 119 | Cross H ranch..... | 89 |
| Cardwell, Hank, ranch..... | 39 | Croton..... | 123 |
| Careyhurst..... | 37 | Croton quadrangle..... | 119, 123 |
| Carlisle..... | 46 | Crow Creek..... | 85, 113 |
| Carson's, William, ranch..... | 93 | Crow Creek Hill triangulation station..... | 15 |
| Carter..... | 113, 136 | Crow Creek quadrangle..... | 117, 118 |
| Case ferry and ranch..... | 100 | Crystal Creek..... | 94 |
| Casper..... | 34 | Cunningham's ranch..... | 77 |
| Casper quadrangle..... | 32, 34 | Curtis ranch..... | 89 |
| Cassa siding..... | 127 | Cyclone Bar..... | 79 |
| Cedar Ridge..... | 89 | C. Y. ranch..... | 32, 34 |
| Cement Ridge..... | 50 | D. | |
| Centennial..... | 24 | Dakoming..... | 139 |
| Chapman's ranch..... | 36 | Dale Creek..... | 129 |
| Cheney quadrangle..... | 68 | Daley's ranch..... | 123 |
| Cherokee Creek..... | 20 | Dana..... | 26, 123 |
| Cherry's hay meadow..... | 85 | Daniel..... | 69 |
| Cheyenne..... | 8, 128, 129 | Daniel quadrangle..... | 95, 99 |
| Cheyenne Pass..... | 15 | Darrow's ranch..... | 45 |
| Cheyenne quadrangle..... | 7, 8, 119, 128 | Davis's ranch..... | 19 |
| Chicago, Burlington & Quincy R. R..... | 119, 120, 121, 122, 123, 124, 125 | Dayton..... | 86 |
| Chicago & North Western Ry..... | 34, 35, 37, 126 | Dayton quadrangle..... | 51, 55, 119, 125 |
| Chimney Rock..... | 16 | Dead Indian Creek..... | 71 |
| Chugwater quadrangle..... | 7, 11, 119, 128 | Deep Ravine..... | 8 |
| Church Buttes..... | 136 | Deer Creek..... | 46 |
| Circle..... | 83 | Deotkin's ranch..... | 47 |
| Clark..... | 70 | Deotkin's South Beaver Creek ranch..... | 47 |
| Clarkson ranch..... | 32 | Devils Gate Creek..... | 26 |
| Clark's ranch..... | 103 | Devils Tower..... | 44 |
| Clear Creek..... | 61, 62 | Devils Tower quadrangle..... | 41, 44 |
| Clearmont..... | 124 | De Wesse Creek..... | 35, 39 |
| Clifton..... | 119 | Dewey Mine..... | 19 |
| Cloud Peak quadrangle..... | 51, 53 | Dickey, Sam, ranch..... | 66 |
| Clubhouse..... | 68 | Dick Turpin meadow..... | 85 |
| Coal Creek..... | 35 | Dome Lake..... | 88 |
| Cody..... | 69, 71 | Donkey Creek..... | 121 |
| Cody ditch..... | 74 | Dorrence, P. F. ranch..... | 101 |
| Cody quadrangle..... | 68, 69 | Double Diamond ranch..... | 81 |
| Cokeville..... | 114 | Douglas..... | 35 |
| Cokeville quadrangle..... | 106, 113 | Douglas, E. M., work of..... | 5 |
| Cold Springs..... | 112 | Douglas Creek..... | 26 |
| Coleman, A. L., work of..... | 51 | Douglas Creek Bridge..... | 24 |
| Colorado & Southern Ry..... | 8, 15, 126, 127, 128, 129 | Douglas quadrangle..... | 32, 35, 119, 126 |
| | | Downington..... | 20 |

| | Page. | | Page. |
|-------------------------------------|--------------------|---|-----------------------------|
| Driscolls Gap..... | 109 | Fort Sanders..... | 22, |
| Drummond, Goyne, work of..... | 17, 68 | Fort Steele..... | 37, 131, 132 |
| Dry Branch..... | 77, 83 | Fort Steele quadrangle..... | 32, 36, 119 |
| Dry Creek..... | 30, 83, 90 | Fort Washakie..... | 80 |
| Dry Muddy Creek..... | 71 | Foster's ranch..... | 65 |
| Dubois..... | 98 | Fourteen Mile ranch..... | 101 |
| Duck Creek..... | 82 | Francis & Cox ranch..... | 98 |
| Duncom Mountain..... | 53 | Francis quadrangle..... | 96, 99 |
| Dunwoody Creek..... | 83 | Francis ranch..... | 19, 99 |
| Durham..... | 9 | Franc Peak quadrangle..... | 68, 72 |
| Dutch Creek Valley..... | 67 | Franklin's ranch..... | 117 |
| Dutch Flat Creek..... | 108 | Frannie..... | 75 |
| Dutch Valley..... | 67 | Frannie quadrangle..... | 68, 75 |
| | | Freedom quadrangle..... | 117, 118 |
| E. | | Freessout Mountain triangulation station..... | 56 |
| Eagles Nest..... | 13, 75 | Fremont County..... | 68, 96 |
| Eagles Nest Creek..... | 13 | Fremont Peak quadrangle..... | 68, 76 |
| East Fork of Tensleep Creek..... | 54 | Fremont quadrangle..... | 119 |
| East Pass Creek..... | 56 | French..... | 19 |
| Eaton quadrangle..... | 11 | French Creek..... | 19 |
| Echeta..... | 123 | Frewen quadrangle..... | 123 |
| Echeta quadrangle..... | 119, 123 | Fuel Section of Geologic Branch, work of.... | 109 |
| Edson..... | 28, 132 | | |
| Egbert quadrangle..... | 7, 11 | G. | |
| Elk Butte..... | 89 | Gale triangulation station..... | 23 |
| Elk Creek..... | 19, 82 | Gannett, S. S., work of..... | 6 |
| Elkhorn Creek..... | 45 | Gardner, C. C., work of..... | 68 |
| Elkhurst..... | 136 | Garrard & Snyder's ranch..... | 55 |
| Elwood..... | 17 | Garrett..... | 136 |
| Embar quadrangle..... | 68, 71 | Geologic Branch, Fuel Section of, work of.... | 109 |
| Embar ranch..... | 72 | Germania..... | 84 |
| Emery's ranch..... | 79 | Gillechrist ranch..... | 15 |
| Encampment..... | 17 | Gillette..... | 122 |
| Encampment Commercial Co..... | 17 | Giltner's ranch..... | 78 |
| Encampment Special quadrangle..... | 17 | Glafcke, E. W., work of..... | 17, 32, 39, 51, 68, 109 |
| Endicott's ranch..... | 50 | Glendo..... | 127 |
| Enger's, Peter, ranch..... | 53 | Glenrock..... | 37 |
| Erickson's ranch..... | 111 | Glenrock quadrangle..... | 32, 37 |
| Evanston..... | 114, 137 | Glidden's ranch..... | 78 |
| Evanston quadrangle..... | 108, 109, 114, 137 | Golayar's, John, house..... | 87 |
| Ewing, Jessie, Canyon..... | 10v | Golden ranch..... | 15 |
| | | Goodman's ranch..... | 114 |
| F. | | Gooseberry Creek..... | 64, 87, 88 |
| Fairview..... | 118 | Goshen Hole quadrangle..... | 7, 11 |
| Fawcett's ranch..... | 49 | Goslins Spring..... | 109 |
| Fee's, Terence, ranch..... | 21 | Government Canyon..... | 45 |
| Felix..... | 123 | Granda's mining claim..... | 82 |
| Fenton..... | 88 | Grand Canyon..... | 50 |
| Ferris quadrangle..... | 32, 36 | Grand Encampment quadrangle..... | 17, 18 |
| Fetterman Siding..... | 37 | Grand Teton quadrangle..... | 63, 77 |
| Fidler Creek..... | 49 | Granger..... | 136 |
| Fillmore..... | 133 | Granger Ditch..... | 51 |
| Fisfrock's ranch..... | 24 | Granger quadrangle..... | 96, 100, 119, 135 |
| First Meadow Creek..... | 83 | Grange Springs..... | 101 |
| Fish..... | 82 | Granite Canyon..... | 14, 129 |
| Fish Creek..... | 84, 99, 115 | Grass Creek..... | 91 |
| Fisher..... | 126 | Green River..... | 79, 100, 101, 107, 108, 135 |
| Fisher, C. F., work of..... | 51 | Green River Lake..... | 76 |
| Fisher's cabin..... | 77 | Green River quadrangle..... | 96, 101 |
| Five Mile Creek..... | 22 | Green's ranch..... | 67, 98 |
| Flat Creek..... | 78 | Greenville..... | 132 |
| Fleming's ranch..... | 50 | Grey Bull River..... | 86 |
| Flying E ranch..... | 66 | Gros Ventre quadrangle..... | 63, 79 |
| Fort Collins trail..... | 8 | Gros Ventre River..... | 84 |
| Fort McKinney quadrangle..... | 51, 59 | Guild's ranch..... | 115 |
| Fort McKinney wood reservation..... | 61 | Gwinn ranch..... | 91 |
| Fort Russell Military Reserve..... | 8 | | |

| H. | Page. | K. | Page. |
|---------------------------------|-----------------|---------------------------------------|-----------------------|
| Haines pasture..... | 96 | Kara..... | 121 |
| Hahn's ranch..... | 50 | Kara siding..... | 121 |
| Haley ranch..... | 21 | Keeline..... | 126 |
| Halls Bridge..... | 24 | Keer's ranch..... | 55 |
| Hallville..... | 124 | Kemp, W. L., work of..... | 51 |
| Hamilton's, M. A., ranch..... | 66 | Kendall (old post office)..... | 79 |
| Hanna..... | 25, 131 | Kendrick..... | 124 |
| Hanna quadrangle..... | 25, 26 | Kenney's dipping pens..... | 18 |
| Hanson ranch..... | 33 | Kent, J. H., work of..... | 100 |
| Hardman's Hollow..... | 118 | Kerwin quadrangle..... | 68 |
| Harper..... | 130 | Keystone mine..... | 25 |
| Harper's, Joe, ranch..... | 65 | Kier..... | 123 |
| Harris ranch..... | 45, 91 | Killpecker Creek..... | 104, 102 |
| Hartville Junction..... | 127 | Kilpatrick's ranch..... | 49 |
| Hartville quadrangle..... | 7, 13, 119, 127 | Kimble's ranch..... | 44 |
| Hasmon ranch..... | 16 | Kinnear quadrangle..... | 95, 80 |
| Hatton..... | 22 | Kirkpatrick's, James, ranch..... | 65 |
| Hay Creek..... | 42 | Kirwin..... | 82 |
| Hay's, Bob, ranch..... | 57 | Kirwin quadrangle..... | 81 |
| Hay's, James, ranch..... | 24 | Knight..... | 137 |
| Hazelton (Smith's ranch)..... | 60 | | |
| Hecla..... | 15 | L. A. K. ranch..... | 49 |
| Henrys Fork..... | 112 | Lake Marie..... | 25 |
| Hesse ranch..... | 60 | Lake Marie Pass..... | 25 |
| Hiddenwater Creek Springs..... | 57 | Lame Johnny Creek..... | 43 |
| Higby..... | 57 | Lander..... | 108 |
| Hilliard..... | 114 | Lander Creek..... | 99, 104 |
| Hill Line Canal..... | 19 | Lander quadrangle..... | 96, 102 |
| Hills, E. W., work of..... | 109 | Lang's ranch..... | 47 |
| Hill's ranch..... | 76 | Laramie..... | 20, 130 |
| Hog Park..... | 18 | Laramie County..... | 7, 119 |
| Holben's ranch..... | 45 | Laramie County Home for the Poor..... | 8 |
| Holmes..... | 24 | Laramie quadrangle..... | 17, 20, 119, 130 |
| Homer's ranch..... | 22, 23 | Laramie River..... | 13 |
| Hopkins stage station..... | 66 | Lariat..... | 123 |
| Hop, Michael, ranch..... | 33 | Latham..... | 123 |
| Horse Creek..... | 53 | Leckie..... | 104 |
| Horse Creek station..... | 16 | Leckie quadrangle..... | 96, 103 |
| Howell..... | 21, 130 | Lenore quadrangle..... | 68, 83 |
| Huntington, H. W., work of..... | 51, 68, 96 | Leo quadrangle..... | 23, 38 |
| Huston town site..... | 18 | Leroy..... | 137 |
| Hutchin ranch..... | 45 | Lewis ranch..... | 46 |
| Hutton Grove schoolhouse..... | 20 | Lincoln County..... | 68, 96, 108, 117, 119 |
| Hyattville..... | 63, 64 | Lindsay's ranch house..... | 23 |
| I. | | Line Creek..... | 68 |
| Idaho-Wyoming State line..... | 92 | Linguist's store..... | 69 |
| Ilo quadrangle..... | 94 | Little Bald Mountain..... | 83 |
| Inez Siding..... | 37 | Little Bighorn Canyon..... | 83 |
| Iron Creek..... | 87 | Little Bitter Creek valley..... | 107 |
| Irvine, Chester, work of..... | 41 | Littlejohn ranch..... | 94 |
| Irvine siding..... | 35 | Little Laramie River..... | 24 |
| Ishawoo..... | 74 | Little Missouri River..... | 45 |
| Islay..... | 16, 130 | Little Popo Agie River..... | 15 |
| J. | | Little Sandy Creek..... | 99, 104 |
| Jackson Lake..... | 78 | Little Wind River..... | 80 |
| James Lake..... | 21 | Lockwood's ranch..... | 69 |
| Jenkins's, J. H., ranch..... | 19 | Logan's, George, residence..... | 73 |
| Jerome..... | 120 | Lombard Ferry..... | 100 |
| Jessie Ewing Canyon..... | 109 | Lone Grave..... | 81 |
| Jetsam quadrangle..... | 127 | Lonetree..... | 112, 113 |
| Jewell lower ranch..... | 100 | Long's ranch..... | 69 |
| Jewell upper ranch..... | 104 | Lookout..... | 120 |
| J K ranch..... | 83 | Lost Creek..... | 38 |
| Johnson County..... | 51 | Lost Spring..... | 126 |
| Johnson siding..... | 119 | Lovell quadrangle..... | 99, 94 |
| Jones's ranch..... | 44 | Love's cabin..... | 18 |
| Jordan's mill..... | 62 | Lusk..... | 126 |
| | | Lusk quadrangle..... | 119, 126 |
| | | Lytle Creek..... | 44, 45 |

| M. | Page. | | Page. |
|---------------------------------------|----------------------|--------------------------------------|-------------|
| McCormick Creek..... | 65 | Nelsons..... | 108 |
| McCullough's ranch..... | 51 | Nelson's ranch..... | 26 |
| McFarland, M. C., work of..... | 7 | Newcastle..... | 47, 49, 120 |
| McFarland ranch..... | 34 | Newcastle quadrangle..... | 41, 47, 119 |
| McGlumis ranch..... | 106 | Newfork..... | 104 |
| Madison's ranch..... | 44 | Newfork quadrangle..... | 96, 104 |
| Mail Camp ranch..... | 72 | Nicht Gulch..... | 103 |
| Manville quadrangle..... | 119, 126 | Nick's, J. S., ranch..... | 67 |
| Marne station..... | 114 | Node ranch..... | 126 |
| Marston..... | 126 | North Brush Creek..... | 18 |
| Mary Jane mine..... | 108 | North Crow Creek..... | 129 |
| Massacre Hill..... | 65 | North Fork..... | 96 |
| Mattie B tunnel..... | 82 | North Fork of Badger Creek..... | 67 |
| Mattox ranch..... | 61 | North Fork of Cheyenne River..... | 131 |
| Maxon quadrangle..... | 108, 109, 110 | North Fork of Clear Creek..... | 61 |
| May's ranch..... | 77 | North Fork of Crazy Woman Creek..... | 61 |
| Meads Creek..... | 66 | North Fork of Fish Creek..... | 84 |
| Meads schoolhouse..... | 67 | North Fork of Owl Creek..... | 72 |
| Medicine Bow..... | 131 | North Fork of Popo Agie River..... | 103 |
| Medicine Bow quadrangle..... | 17, 23 | North Fork of Powder River..... | 53 |
| Medicine Bow River..... | 27, 36 | North Fork of Redwater Creek..... | 42 |
| Medicine Lodge Creek..... | 64 | North Fork of Shoshone River..... | 73 |
| Metete..... | 87 | North Fork of Snake River..... | 16 |
| Metete quadrangle..... | 68, 87 | North Fork of Wind River..... | 81, 88 |
| Minkney's ranch..... | 120 | North Platte River..... | 30, 37 |
| Minor Ferry..... | 78 | Nowood quadrangle..... | 51, 62 |
| Morser's ranch..... | 68 | Nowood River..... | 62 |
| Meredith, Orr, work of..... | 68 | Nusale, F. A. work of..... | 51, 65, 96 |
| Middle Fork of Clear Creek..... | 61 | | |
| Middle Fork of Crazy Woman Creek..... | 60 | O. | |
| Middle Fork of Shell Creek..... | 80 | Ohlman..... | 86 |
| Middle Fork of Wood River..... | 82 | Oil Canyon..... | 49 |
| Mikway..... | 108 | Oil Creek..... | 48 |
| Miller, Donnell, work of..... | 17 | Oil Spring..... | 47 |
| Miller's Canyon..... | 110 | Old Bill Beck ranch..... | 88 |
| Miller's house..... | 78 | Old Fish Creek shingle mill..... | 115 |
| Minturn..... | 122 | Old Ilo..... | 94 |
| Monarch..... | 126 | Old Kendall..... | 79 |
| Monbeck, R. R., work of..... | 94 | Old Percy..... | 26 |
| Monell..... | 133 | Old Pitchfork ranch..... | 96 |
| Montana-Wyoming boundary line..... | 75 | Old Riverdale..... | 42 |
| Montpelier quadrangle..... | 108, 116 | Old Sherman..... | 14 |
| Monument Springs..... | 62 | Old Wyoming..... | 21 |
| Moon's house..... | 87 | Opal quadrangle..... | 119, 126 |
| Moorcroft quadrangle..... | 41, 49, 119, 120 | Oregon Basin quadrangle..... | 68, 87 |
| Moore's, Elijah ranch..... | 19 | Oregon Coulees..... | 89, 90 |
| Morley's, Tom, ranch..... | 94 | O'Rherson's, Daniel, ranch..... | 107 |
| Morrow stage station..... | 56 | Orin Junction..... | 35, 137 |
| Mosquito Lake..... | 80 | Oriva..... | 122 |
| Moss ranch..... | 115 | Osage..... | 49 |
| Mountain Home..... | 23 | Osborne's house..... | 77 |
| Mount Leidy quadrangle..... | 68, 84 | Otto..... | 86, 129 |
| Moyer, C. S., work of..... | 96 | Otto quadrangle..... | 68, 85 |
| Muddy Bridge..... | 39 | Otto siding..... | 14 |
| Muddy Creek..... | 59, 87, 99, 103, 115 | Owen Poyce ranch..... | 33 |
| Mud Springs ranch..... | 111 | Owl Creek..... | 72, 90, 91 |
| Mullen Creek Bridge..... | 24 | Owl Creek Mountain..... | 72 |
| Murray's ranch..... | 62 | Owl Mountains..... | 87 |
| Mush Creek..... | 48 | Ozone..... | 14 |
| | | | |
| N. | | P. | |
| Names Hill..... | 108 | Parkman..... | 56 |
| Nash & Walling's ranch..... | 65 | Parry H. G., work of..... | 51 |
| Natrona County..... | 32 | Pass..... | 56 |
| Nebraska-Wyoming State line..... | 12 | Patrick quadrangle..... | 7, 12 |
| Needle Rocks..... | 117 | Payne ranch..... | 22, 65, 66 |
| Needles..... | 61 | Pease ranch..... | 77 |
| | | Pedro..... | 120 |

| | Page. | Y. | Page. |
|--------------------------------------|---------|---------------------------------|----------|
| Wyoming-Idaho State line..... | 92 | Yeast's upper ranch..... | 45 |
| Wyoming-Montana State line..... | 75 | Yellow Creek..... | 114, 117 |
| Wyoming-Nebraska State line..... | 13 | Yellowstone Forest Reserve..... | 51, 103 |
| Wyoming-South Dakota State line..... | 50, 119 | Younts Peak quadrangle..... | 68, 92 |
| Wyoming, southwest corner of..... | 116 | Y T ranch..... | 49 |
| WYT ranch..... | 120 | Y U ranch..... | 88 |



DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

BULLETIN 559

RESULTS OF SPIRIT LEVELING IN MICHIGAN

1911 AND 1913

R. B. MARSHALL, CHIEF GEOGRAPHER

Work done in cooperation with the State of Michigan, through the Michigan Geological
and Biological Survey, R. C. Allen, Director



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CONTENTS.

| | Page. |
|---|-------|
| Introduction | 5 |
| Cooperation..... | 5 |
| Previous publication..... | 5 |
| Personnel..... | 5 |
| Classification..... | 5 |
| Bench marks..... | 5 |
| Datum..... | 6 |
| Topographic maps..... | 7 |
| Precise leveling | 7 |
| Greenland, Houghton, Paynesville, Rubicon, Sidnaw, and Winona quadrangles (Houghton and Ontonagon counties)..... | 7 |
| Primary leveling | 11 |
| Adrain, Alvordton, Edon, Hudson, Pioneer, Swanton, and Wauseon quadrangles (Hillsdale and Lenawee counties)..... | 11 |
| Grand Rapids, Holland, Ionia, Jenison, Lowell, and Muir quadrangles (Barry, Eaton, Kent, and Ottawa counties)..... | 15 |
| Centerville, Coldwater, Kalamazoo, Reading, Schoolcraft, Sturgis, and Wayland quadrangles (Allegan, Branch, Hillsdale, Kalamazoo, and St. Joseph counties)..... | 25 |
| Chesaning, Corunna, Fowlerville, Saginaw, and St. Charles quadrangles (Livingston, Saginaw, and Shiawassee counties)..... | 37 |
| Houghton quadrangle (Houghton County)..... | 44 |
| Appendix A: Elevations adjusted by the Coast and Geodetic Survey from precise leveling | 47 |
| Appendix B: Secondary elevations | 74 |
| Index | 77 |

ILLUSTRATION,

| | |
|---|------------|
| PLATE I. Geological Survey bench marks | Page. 5 |
|---|------------|



GEOLOGICAL SURVEY BENCH MARKS.

A, Tablet used in coppering for States. The State name is inserted at *G*.
B and *D*, Copper ten penny bench mark consisting of a nail and copper washer.
A, *C*, and *E*, Tablets for stone or concrete structures.
F, Iron post used where there is no rock.

RESULTS OF SPIRIT LEVELING IN MICHIGAN IN 1911 AND 1913.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Cooperation.—The State of Michigan contributed financially to all the work of 1911 and 1913 in this State.

Previous publication.—The following results of spirit leveling are supplemental to and in accord with the elevations contained in Bulletin 461 and are in agreement with the 1907 adjustment of precise leveling. Elevations were not changed by the 1912 adjustment. No spirit leveling was done in the State by the United States Geological Survey during 1912.

Personnel.—The field work of 1911 and 1913 was done under the supervision of W. H. Herron, geographer, under the general direction of R. B. Marshall, chief geographer. Credit is given to the respective levelmen in the introductions to the several lists. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, under the general direction of E. M. Douglas, geographer.

Classification.—The elevations are classified as precise or primary, according to the methods employed in their determination. For precise lines instruments and rods of the highest grade are used, each line is run in both forward and backward directions, and every precaution is taken to guard against error. The allowable divergence between the forward and the backward lines in feet is represented by the formula $0.017\sqrt{D}$, in which D is the distance in miles between bench marks. For primary lines standard Y levels are used; lines are run in circuits or are closed on precise lines, with an allowable closing error in feet represented by the formula $0.05\sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given the work to maintain this standard. For levels of both classes careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (*C* and *E*, Pl. I),

3½ inches in diameter and one-fourth inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock, in the wall of some public building, in a bridge abutment, or in other substantial masonry structure. The second form (*F*, Pl. I), employed where masonry or rock is not accessible, consists of a hollow wrought-iron post 3½ inches in outer diameter and 4 feet in length. It is split at the bottom and expanded to 10 inches in order to give a firm bearing on the earth, and is set about 3 feet in the ground. A bronze or aluminum-bronze cap is riveted upon the top of the post. A third style of bench mark with abbreviated lettering (*B* and *D*, Pl. I) is used for unimportant points. This consists of a special copper nail 1½ inches in length driven through a copper washer seven-eighths of an inch in diameter. The tablets as well as the caps on the iron posts are appropriately lettered, and cooperation by States is indicated by the addition of the State name (*G*, Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot as determined by the levelman. These numbers are stamped with $\frac{1}{16}$ -inch steel dies on the tablets or post caps, to the left of the word "feet." The office adjustment of the notes and the reduction to mean sea-level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey, at Washington, D. C., for the adjusted values and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of winds and tides were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and of the mean of all the low tides, which is called half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions, such as long, narrow bays, rivers, and like features, will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if great accuracy is desired they must extend over several years. At ocean stations half-tide level and mean sea level usually differ but little. It is assumed that there is no difference between the mean sea levels determined from observations made in the Atlantic Ocean, the Gulf of Mexico, and the Pacific Ocean, respectively.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this

fact is indicated by the addition of a letter or a word to the right of the word "Datum" on tablets or posts. For such areas corrections of published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

Topographic maps.—Maps of the following quadrangles wholly or partly in Michigan have been published by the United States Geological Survey up to November 1, 1914. They may be obtained, unless otherwise noted, for 10 cents each, or \$3 for 50, on application to the Director of the Survey, at Washington, D. C.

Alvordton (Ohio-Mich.).
Ann Arbor.¹
Calumet.
Crystal Falls.
Detroit.
Dexter.¹
Fowlerville.
Grand Rapids.
Groesepoint.
Howell.
Iron River (Mich.-Wis.).
Lansing.
Marquette.
Marquette special (50 cents).
Maumee Bay (Ohio-Mich.).
Menominee special.

Milford.
Ned Lake.
Passage Island.
Perch Lake.
Pontiac.
Rochester.
Romulus.
Sagola.
Saline.¹
South Lyon.¹
Toledo (Ohio-Mich.).
Wauseon (Ohio-Mich.).
Wayne.
Witbeck.
Wyandotte.
Ypsilanti.¹

PRECISE LEVELING.

Greenland, Houghton, Paynesville, Rubicon, Sidnaw, and Winona quadrangles.

HOUGHTON AND ONTONAGON COUNTIES.

The following elevations were determined by precise leveling in 1911 by E. L. McNair and are based upon bench mark No. 1 of the Corps of Engineers, U. S. Army, at Houghton. The orthometric corrections have been made.

GREENLAND QUADRANGLE.

[Latitude 46° 45'–47°; longitude 89°–89° 15'.]

| | |
|---|------------------|
| From point 2 miles east of Lake Mine west along Copper Range R. R. to Peppard. | |
| Lake Mine, 2 miles east of, at east end of bridge over east branch of Firestone River, on north side of track, 15 inches from northeast corner of concrete abutment; aluminum tablet stamped "967"..... | Feet. 967.550 |
| Lake Mine, 1 mile east of, 240 feet west of sign "One mile to station"; spike in telegraph pole, painted "U. S. B. M. 1004.1"..... | 1,004.44 |
| Lake Mine, in front of station; top of rail..... | 1,006.5 |
| Lake Mine, 620 feet west of station, 20 feet west of road crossing, south side of track; spike in telegraph pole, painted "U. S. B. M. 1006.0"..... | 1,006.32 |

¹ Dexter, Saline, South Lyon, and Ypsilanti maps show Ann Arbor quadrangle on a larger scale.

| | |
|--|----------------------|
| Lake Mine, 670 feet north of railroad track, about 100 feet northwest of residence of manager of Lake mine, in large outcrop of solid rock 200 feet west of road or street nearly north-south; aluminum tablet stamped "Prim. Trav. Sta. No. 11, 1037, 1911" | Feet. 1, 037. 435 |
| Peppard, crossing of Copper Range and Mineral Range railroads. | 1, 053. 1 |
| Peppard, 290 feet south of railroad crossing, west side of track; spike in telegraph pole, painted "U. S. B. M. 1050" | 1, 050. 77 |

HOUGHTON QUADRANGLE.

[Latitude 47°-47° 15'; longitude 88° 30'-88° 45'.]

From Houghton southwest along Copper Range R. R. to point 1 mile north of Toivola.

| | |
|--|-------------|
| Houghton, 120 feet west of Duluth, South Shore & Atlantic Ry. station, on west line of Huron Street, 275 feet north of Sheldon Street, in stone foundation of brick store building of L. Hennes & Co., 0.5 foot from corner and about 0.5 foot above sidewalk; head of 60d spike driven in wall (U. S. E. B. M. 1) | 608. 747 |
| Houghton, 120 feet west of Duluth, South Shore & Atlantic Ry. station, on west line of Huron Street, 275 feet north of Sheldon Street, in north face of foundation wall of brick store building of L. Hennes & Co., about 4 feet above ground; aluminum tablet stamped "612" | 611. 591 |
| Houghton, in front of Duluth, South Shore & Atlantic Ry. station; top of rail | 608. 2 |
| Hancock, brick office building of Detroit & Lake Superior Smelting Works, southwest corner of; small horizontal surface cut on beveled edge of sandstone water table about midway of the bevel (U. S. E. B. M. 1) Engineers' elevation 609.829 | 609. 865 |
| Houghton, in front of Copper Range R. R. station; top of rail | 607. 4 |
| Houghton, 0.9 mile west of Copper Range R. R. station, 30 feet east of road crossing, at milepost 18, on south side of track; spike in telegraph pole, painted "U. S. B. M. 637.1" | 637. 06 |
| Milepost 19, about 600 feet west of; spike in telegraph pole, painted "U. S. B. M. 743.7" | 743. 71 |
| Houghton, 2.9 miles west of, at milepost 20, 25 feet north of track; iron post stamped "823" | 822. 840 |
| Milepost 21, about 1,260 feet north of; spike in telegraph pole, painted (incorrectly) "U. S. B. M. 884.5" | 894. 46 |
| Atlantic, 600 feet north of station, on east side of track; spike in telegraph pole, painted "U. S. B. M. 991.7" | 991. 68 |
| Atlantic, in front of station; top of rail | 996. 1 |
| Atlantic, 0.5 mile south of station, on south side of track; spike in telegraph pole, painted "U. S. B. M. 1032.0" | 1, 032. 03 |
| Mill Mine Junction, intersection of Copper Range R. R. tracks; top of rail .. | 1, 127. 7 |
| Mill Mine Junction, 35 feet north of main track, 45 feet west of Painesdale and Red Ridge track; iron post stamped "1128" | 1, 127. 596 |
| Mill Mine Junction, southwest corner of station platform; copper nail. | 1, 128. 65 |
| Mill Mine Junction, 1 mile south of, on east side of track; spike in telephone pole, painted "U. S. B. M. 1217.6" | 1, 217. 56 |
| Messner, switch stand at north end of siding; top of rail | 1, 259. 2 |
| Milepost 26, 950 feet north of, east side of track; spike in telegraph pole, painted "U. S. B. M. 1266.6" | 1, 266. 54 |
| Milepost 27, 90 feet south of; spike in telegraph pole, painted "U. S. B. M. 1280.6" | 1, 280. 65 |

| | |
|--|---------------------|
| Milepost 28, 95 feet south of; spike in telegraph pole, painted "U. S. B. M. 1281.6" | Feet. 1, 281. 58 |
| Ricedale, 1.3 miles north of, 25 feet west of track; iron post stamped "1278" | 1, 278. 259 |
| Ricedale, 0.3 mile north of; spike in telegraph pole, painted "U. S. B. M. 1290.8" | 1, 290. 78 |
| Toivola, 2 miles north of, 2,320 feet north of milepost 31; spike in telegraph pole, painted "U. S. B. M. 1286.8" | 1, 286. 82 |
| Toivola, 1 mile north of, 930 feet north of signboard "1 mile to station"; spike in telegraph pole, painted "U. S. B. M. 1278.5" | 1, 278. 53 |

PAYNESVILLE QUADRANGLE.

[Latitude 46° 30'–46° 45'; longitude 89°–89° 15'.]

From McKeever Junction southeast along Chicago, Milwaukee & St. Paul Ry. to Wasas siding.

| | |
|--|-------------|
| McKeever Junction, near south end of Y, 135 feet east of track, in line with public road running west, on top of bank, 55 feet west of quarter corner between secs. 9 and 10, T. 50 N., R. 38 W.; iron post stamped "1057" | 1, 057. 739 |
| McKeever Junction, 1.2 miles south of; spike in telegraph pole, painted "U. S. B. M. 1100.2" | 1, 100. 49 |
| Milepost 303, near; spike in telegraph pole, painted "U. S. B. M. 1124.9" | 1, 125. 27 |
| Wasas siding, 460 feet south of north end of; spike in telegraph pole, painted "U. S. B. M. 1158.1" | 1, 158. 42 |

RUBICON QUADRANGLE.

[Latitude 46° 30'–46° 45'; longitude 88° 45'–89°.]

From milepost 301 on Chicago, Milwaukee & St. Paul Ry. southeast along railroad to milepost 283.

| | |
|--|-------------|
| Milepost 301, 550 feet north of; spike in telegraph pole, painted "U. S. B. M. 1123.7" | 1, 124. 07 |
| Rubicon, 920 feet north of station, 12 feet east of track, 85 feet south of road crossing; iron post stamped "1092" | 1, 092. 754 |
| Rubicon, in front of Hubbell's Mill station; top of rail | 1, 104. 7 |
| Milepost 299; spike in post, painted "U. S. B. M. 1149.1" | 1, 149. 42 |
| Plato, 500 feet south of township line, 600 feet south of water tank, 40 feet west of track; iron post stamped "Prim. Trav. Sta. No. 13, 1165, 1911" | 1, 165. 416 |
| Milepost 297, 1,260 feet east of; spike in telegraph pole, painted "U. S. B. M. 1165.4" | 1, 165. 69 |
| Milepost 296, 1,200 feet south of; spike in telegraph pole, painted "U. S. B. M. 1182.9" | 1, 183. 23 |
| Milepost 295, 2,480 feet south of; spike in telegraph pole, painted "U. S. B. M. 1226.0" | 1, 226. 39 |
| Milepost 294; spike in post, painted "U. S. B. M. 1250.7" | 1, 251. 07 |
| Milepost 293, opposite, 22 feet north of track, on outside of curve; iron post stamped "Prim. Trav. Sta. No. 14, 1301, 1911" | 1, 301. 279 |
| Milepost 292; spike in post, painted "U. S. B. M. 1348.7" | 1, 349. 03 |
| Milepost 292, 2,800 feet east of; spike in telegraph pole, painted "U. S. B. M. 1369.0" | 1, 369. 33 |
| Milepost 291; spike in post, painted "U. S. B. M. 1398.0" | 1, 398. 38 |
| Frost Junction, at north end of siding, 510 feet south of switch stand, 26 feet west of track; iron post stamped "Prim. Trav. Sta. No. 15, 1397, 1911" | 1, 397. 553 |
| Frost Junction, at south end of siding; top of rail | 1, 407. 4 |
| Milepost 289, 950 feet south of; spike in telegraph pole, painted "U. S. B. M. 1387.2" | 1, 387. 52 |

| | |
|--|----|
| Milepost 288, 800 feet south of; spike in telegraph pole, painted "U. S. B. M. 1351.5"..... | 1, |
| Milepost 287; spike in post, painted "U. S. B. M. 1346.9"..... | 1, |
| Milepost 286; spike in post, painted "U. S. B. M. 1386.4"..... | 1, |
| Milepost 285, 15 feet north of; spike in telegraph pole, painted "U. S. B. M. 1361.0"..... | 1, |
| Milepost 284, about 200 feet north of; spike in telegraph pole, painted "U. S. B. M. 1319.9"..... | 1, |
| Milepost 283, 7 feet from post, 20 feet north of track; iron post stamped "Prim. Trav. Sta. No. 16, 1333, 1911"..... | 1, |
| Milepost 283, 2,700 feet south of; spike in telegraph pole, painted (incorrectly) "U. S. B. M. 1327.3"..... | 1 |

SIDNAW QUADRANGLE.

[Latitude 46° 30'–46° 45'; longitude 88° 30'–88° 45'.]

From milepost 282 southeast along Chicago, Milwaukee & St. Paul Ry. to Sidnaw.

| | |
|---|----|
| Milepost 282, 40 feet west of; spike in telegraph pole, painted (incorrectly) "U. S. B. M. 1315.8"..... | 1, |
| Milepost 281, 160 feet west of; spike in telegraph pole, painted (incorrectly) "U. S. B. M. 1323.9"..... | 1, |
| Sidnaw, 1.25 miles west of station, 50 feet east of milepost 280, 40 feet south of track; iron post stamped (incorrectly) "1368"..... | 1, |
| Milepost 279, 1,200 feet west of post, at road crossing; top of rail..... | 1, |
| Sidnaw, 200 feet west of station, at crossing of Duluth, South Shore & Atlantic Ry.; top of rail..... | 1, |
| Sidnaw, opposite east end of station, north side of railroad, 40 feet east of Northern Hotel, near entrance to Roycroft farm; iron post stamped "Prim. Trav. Sta. No. 17, 1381, 1911" (incorrectly stamped 1381)..... | 1, |

WINONA QUADRANGLE.

[Latitude 46° 45'–47°; longitude 88° 45'–89°.]

From Toivola southwest along Copper Range R. R. to milepost 53.

| | |
|--|----|
| Toivola, 112 feet north of office window in station, 19 feet east of center of track, 40 feet south of section house, near fence around house; iron post stamped "Prim. Trav. Sta. No. 7, 1276, 1911"..... | 1, |
| Toivola, in front of station; top of rail..... | 1, |
| Toivola, 1 mile south of, 30 feet north of sign "1 mile to station;" spike in telegraph pole, painted "U. S. B. M. 1298.4"..... | 1, |
| Stunington siding, in front of signboard; top of rail..... | 1, |
| Stunington siding, south end of; spike in telegraph pole, painted "U. S. B. M. 1303.2"..... | 1, |
| Milepost 36, 720 feet north of; spike in telegraph pole, painted "U. S. B. M. 1282.5"..... | 1, |
| Milepost 37, 30 feet south of; spike in telegraph pole, painted "U. S. B. M. 1279.3"..... | 1, |
| Milepost 38, 70 feet south of; spike in telegraph pole, painted "U. S. B. M. 1268.2"..... | 1, |
| Elm River siding, 430 feet south of section house, 46 feet west of center of track, on top of bank about 8 feet above track; iron post stamped "Prim. Trav. Sta. No. 8, 1270, 1911"..... | 1, |
| Elm River, 1 mile south of, 240 feet south of sign "One mile to station;" spike in telegraph pole, painted "U. S. B. M. 1224.7"..... | 1, |
| Milepost 40, 1,970 feet south of; spike in telegraph pole, painted "1220.9"..... | 1, |

| | |
|--|-------------------|
| Twin Lakes, 300 feet north of station; spike in telegraph pole, painted "U. S. B. M. 1203.5" | Feet. 1,203.55 |
| Twin Lakes, in front of station; top of rail | 1,209.1 |
| Faleston, in front of station; top of rail | 1,205.6 |
| Faleston, 1,090 feet south of station, at bridge over Misery River, 6 feet east of center of track, on top of concrete abutment; aluminum tablet stamped "1200" | 1,199.844 |
| Winona, 1 mile east of, 240 feet west of sign "One mile to station;" spike in telegraph pole, painted "U. S. B. M. 1240.9" | 1,240.89 |
| Winona, in front of station; top of rail | 1,244.9 |
| Winona, 750 feet west of station, 31 feet north of track, on bank about 3 feet above track; iron post stamped "Prim. Trav. Sta. No. 9, 1247, 1911" | 1,247.084 |
| Milepost 46, 60 feet east of; spike in telegraph pole, painted "U. S. B. M." | 1,210.95 |
| Milepost 47, 1,150 feet south of; spike in telegraph pole, painted (incorrectly) "1204.3 U. S. B. M." | 1,205.66 |
| Seager siding, 75 feet south of section house, 31 feet east of track, about same level as track; iron post stamped "Prim. Trav. Sta. No. 10, 1220, 1911." (Incorrectly stamped "1220") | 1,221.112 |
| Seager, 0.8 mile south of, 760 feet east of sign "One mile to station;" spike in telegraph pole, painted (incorrectly) "U. S. B. M. 1177.4" | 1,178.71 |
| Milepost 50, 0.25 mile south of; spike in telegraph pole, painted "U. S. B. M. 1127.8" | 1,128.12 |
| Milepost 51, 160 feet south of; spike in telegraph pole, painted "U. S. B. M. 1081.2" | 1,081.57 |
| General flag station, at road crossing; top of rail | 1,063.2 |
| Indiana flag station, 20 feet east of milepost 52; spike in telegraph pole, painted "U. S. B. M. 1031.8" | 1,032.14 |
| Milepost 53, 100 feet east of; spike in telegraph pole, painted "U. S. B. M. 982.4" | 982.75 |

PRIMARY LEVELING.

Adrian, Alvordton, Edon, Hudson, Pioneer, Swanton, and Wauseon quadrangles.

HILLSDALE AND LENAWEE COUNTIES.

The elevations in the following list were determined by primary leveling and accord with those in Bulletin 461 for Michigan and in Bulletins 411 and 476 for Ohio.

The leveling was done in 1911 in Alvordton quadrangle by Philip Flitman and C. W. Howell; in Edon and Pioneer quadrangles by R. French; in Hudson quadrangle by Flitman; in Swanton quadrangle by F. Mabrey; and in Adrian and Wauseon quadrangles by E. Mills.

Additional leveling in most of these quadrangles will be found in Ohio lists.

ADRIAN QUADRANGLE.

[Latitude 41° 45'-42°; longitude 84°-84° 15'.]

From Ridgeville west along highways to point 3 miles northwest of Morenci.

| | |
|---|-----------------|
| Ridgeville, northeast corner of crossroads, northwest corner of concrete step at entrance to district school No. 5; chiseled square | Feet. 736.42 |
| Ridgeville, 0.8 mile west of, southwest corner of crossroads; spike in base of fence post, marked "736.9" | 737.07 |

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|---|------------------|
| Lyons, 1 mile east by 4 miles north of, southwest corner of crossroads; iron post stamped "748"..... | Feet. 748.507 |
| Lyons, 4 miles north of, northwest corner of crossroads; spike in base of telephone pole, marked "761.4"..... | 761.58 |
| Weston, 1 mile south of, northeast corner of crossroads; spike in base of fence post, marked "779.2"..... | 779.32 |
| Weston, 1 mile south by 1 mile west of, northwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 33, 779, Mich., 1911"..... | 779.283 |
| Weston, 1 mile south by 2 miles west of, at Lake Shore & Michigan Southern Ry. crossing, southeast corner of crossroads; spike in base of fence post, marked "788.8"..... | 788.95 |
| Weston, 1 mile south by 3 miles west of, northwest corner of crossroads; painted square on concrete base of fence post, marked "793.4"..... | 793.52 |
| Morenci, 2.25 miles north by 2.5 miles east of, southeast corner of crossroads; iron post stamped "788"..... | 787.943 |
| Morenci, 2.25 miles north by 1.25 miles east of, southeast corner of T road south; spike in base of telephone pole, marked "783.6"..... | 783.71 |
| Morenci, 2.25 miles north by 0.8 mile east of, northwest corner of T road north; spike in base of fence post, marked "781.8"..... | 781.84 |
| Morenci, 2.25 miles north of, northeast corner of crossroads at schoolhouse (district 2, Seneca); iron post stamped "792"..... | 791.992 |
| Morenci, 2.25 miles north by 0.5 mile west of, on west bank of Bean Creek, on south side of road at bend; spike in base of telephone pole, marked "783.9"..... | 783.96 |

ALVORDTON QUADRANGLE.

[Latitude 41° 30'–41° 45'; longitude 84° 15'–84° 30'.]

From point 4 miles southeast of Ransom east and north along public road to point 1 mile north by 2 miles west of Waldron.

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|---|--------|
| Ransom, 2 miles east by 2.5 miles south of, at northeast corner of T road; spike in fence post, marked "903.9"..... | 903.88 |
| Ransom, 3 miles east by 2.5 miles south of, at southwest corner of crossroads; spike in telephone pole, marked "893.9"..... | 893.88 |
| Waldron, 2 miles west by 1 mile north of, at northwest wing of bridge at crossroads over Maumee drain; spike in bulkhead, marked "889.7"..... | 889.73 |

From point 3 miles west of Morenci to point 5 miles northwest of Morenci.

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|---|---------|
| Morenci, 3 miles west of, at southeast corner of crossroads; copper nail in culvert, painted "T. B. M. 786.0"..... | 786.19 |
| Morenci, 3 miles west by 0.6 mile north of, at northeast corner of crossroads; iron post stamped "806"..... | 806.524 |
| Morenci, 3 miles west by 1.6 miles north of, at southwest corner of crossroads; spike in base of telephone pole, marked "T. B. M. 812.9"..... | 813.05 |

EDON QUADRANGLE.

[Latitude 41° 30'–41° 45'; longitude 84° 45'–85°.]

From point 1 mile southwest of Camden to point 4 miles southwest of Camden.

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| Camden, 1 mile south of, southwest corner of crossroads, 10 feet west of fence corner; iron post stamped "1019"..... | 1,020.138 |
| Camden, 1 mile south by 2 miles west of, at southwest corner of crossroads; spike in base of fence post, marked "1080.321"..... | 1,081.30 |
| Camden, 2 miles south by 2 miles west of, at southwest corner of T road west, 70 feet east to small black-oak tree; iron post stamped "1002".... | 1,003.124 |

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| Camden, 3 miles south by 2 miles west of, at northeast corner of crossroads, 150 feet west by 20 feet north to South Camden Church; top of rock, marked "1086.985"..... | Feet. 1, 087.98 |
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HUDSON QUADRANGLE.

[Latitude 41° 45'–42°; longitude 84° 15'–84° 30'.]

From point 1 mile north by 2 miles west of Waldron north and east to point 2 miles north by 1.5 miles west of Morenci.

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| Waldron, 2 miles west by 2 miles north of, at southwest corner of crossroads; iron post stamped "896"..... | 896.821 |
| Waldron, 2 miles north by 1 mile west of, at southwest corner of crossroads; spike in fence post, marked "895.9"..... | 895.88 |
| Waldron, 2 miles north of, at northeast corner of crossroads; spike in fence post, marked "896.3"..... | 896.28 |
| Waldron, 2 miles north by 1 mile east of, at southwest corner of crossroads; iron post stamped "896"..... | 896.044 |
| Waldron, 2 miles north by 2 miles east of, at southeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 31, 889, 1911"..... | 889.264 |
| Waldron, 1.5 miles north by 3 miles east of, at west end of T road; spike in fence post, marked "858.2"..... | 858.27 |
| Munson, 2.5 miles north of, at southwest corner of crossroads; iron post stamped "846"..... | 845.878 |
| Munson, 2.5 miles north by 2 miles east of, southeast corner of crossroads; spike in fence post, marked "829.6"..... | 829.68 |
| Munson, 2.5 miles north by 3 miles east of, at northeast corner of crossroads; iron post stamped "818"..... | 818.548 |
| Morenci, 2.25 miles north by 1.5 miles west of, southeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 32, 798, Mich., 1911"..... | 797.735 |

PIONEER QUADRANGLE.

[Latitude 41° 30'–41° 45'; longitude 84° 30'–84° 45'.]

From point 4 miles southeast of Camden to point 1 mile south of Camden.

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| Camden, 3 miles south by 2 miles east of, in southwest corner of crossroads, at edge of road; stone marked "1027.5"..... | 1, 028.52 |
| Camden, 2 miles south by 2 miles east of, at northeast corner of T road south, 10 feet west to east side of T road, 70 feet east to 15-inch hickory tree; iron post stamped "993"..... | 994.511 |
| Camden, 2 miles south by 2.5 miles east of, at T road north, bridge over Joe River, north truss, east end; top of nut on connecting pin, marked "954.1"..... | 955.14 |
| Joe River, surface of water, August 4, 1911..... | 944 |
| Camden, 1 mile south by 2.5 miles east of, in northwest corner of crossroads, in edge of road; rock marked "1012.338"..... | 1, 013.338 |
| From point 2 miles northeast of Pioneer north along highways 3 miles, thence west to point 3 miles southeast of Camden. | |
| Pioneer, 1 mile north by 2 miles east of, at northwest corner of T road north, on wing of concrete abutment of bridge; chiseled square painted "T. B. M. 875.0"..... | 875.08 |
| Ransom, 1 mile east by 4.5 miles south of, at northwest corner of crossroads; iron post stamped "887"..... | 886.595 |
| Ransom, 1 mile east by 3.5 miles south of, at northeast corner of crossroads; copper nail in top of post, painted "T. B. M. 901.4"..... | 901.46 |

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| Ransom, 2 miles east by 3.5 miles south of, at northeast corner of crossroads; spike in fence post, marked "890.1"..... | Feet. 890.14 |
| Ransom, 1 mile east by 2.5 miles south of, at head of T road west; iron post stamped "916"..... | 915.946 |
| Ransom, 2.5 miles south of, at northeast corner of crossroads, on Amboy-Ransom township line; spike in base of telephone pole, marked "924.7"..... | 924.76 |
| Ransom, 2.5 miles south by 1 mile west of, at southeast corner of crossroads, Amboy-Ransom township line; spike in base of post, marked "944.7"..... | 944.72 |
| Ransom, 2.5 miles south by 2 miles west of, at northeast corner of T road north, Amboy-Ransom township line; iron post stamped "967"..... | 966.950 |
| Ransom, 3 miles west by 2 miles south of, at T road south, on large stone at center of T; chiseled square painted "T. B. M. 1018.1"..... | 1,018.10 |
| Frontier, 0.5 mile west by 3 miles south of, southeast corner of crossroads, Amboy-Woodbridge township line; spike in fence post marked "970.7"..... | 970.66 |
| Frontier, 1.5 miles west by 3 miles south of, at southwest corner of crossroads, Amboy-Woodbridge township line; iron post stamped "982"..... | 981.998 |
| Frontier, 2.5 miles west by 3 miles south of, at head of T road east; spike in base of telephone pole, painted "T. B. M. 1014.0"..... | 1,014.00 |
| Frontier, 2.5 miles west by 2.5 miles south of, at head of T road west; chiseled square on stone, painted "T. B. M. 1007.4"..... | 1,007.44 |
| Frontier, 3.5 miles west by 2.5 miles south of, at northeast corner of T road east; chiseled square on large granite boulder, painted "T. B. M. 1008.4"..... | 1,008.44 |
| Frontier, 3.5 miles west by 3 miles south of, at northwest corner of T road west; nail in base of post, painted "T. B. M. 1008.0"..... | 1,007.97 |
| Camden, 1 mile south by 3.5 miles east of, at southeast corner of T road south; iron post stamped "991"..... | 990.837 |

SWANTON QUADRANGLE.

[Latitude 41° 30'–41° 45'; longitude 83° 45'–84°.]

From point 7.1 miles east of Mulberry west along highways through Mulberry to Ridgeville.

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| Mulberry, 7.1 miles east of, 0.5 mile north of Ohio-Michigan State line, southeast corner of crossroads; spike in base of corner post, marked "692.6"..... | 693.65 |
| Mulberry, 6.6 miles east of, southeast corner of T road east, spike in base of corner post, marked "698.8"..... | 699.90 |
| Mulberry, 6.1 miles east of, southwest corner of crossroads; spike in base of corner post; marked "698.0"..... | 699.10 |
| Mulberry, 5.1 miles east of, 1 mile north of Southlands station, northwest corner of crossroads; iron post stamped "699"..... | 700.350 |
| Mulberry, 4.1 miles east of, northeast corner of crossroads; spike in base of telephone pole, painted "703.3"..... | 704.29 |
| Mulberry, 3.1 miles east of, northeast corner of crossroads; spike in base of fence post, painted "707.9"..... | 708.25 |
| Mulberry, 2.1 miles east of, northwest corner of crossroads; iron post stamped "710"..... | 710.660 |
| Mulberry, 1.1 miles east of, northeast corner of crossroads; spike in base of telephone pole, marked "713.2"..... | 713.51 |
| Mulberry, northeast corner of crossroads; spike in base of telephone pole, marked "717.6"..... | 717.89 |
| Mulberry, 1 mile west of, northeast corner of crossroads; iron post stamped "720"..... | 720.579 |

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| Mulberry, 2 miles west of, northeast corner of crossroads; spike in base of fence post, painted "722.0"..... | Feet. 722. 30 |
| Mulberry, 3 miles west of, northeast corner of crossroads; spike in base of telephone pole, painted "724.8"..... | 725. 10 |
| Mulberry, 3.5 miles west of, northeast corner of T road north; spike in base of fence post, painted "723.6"..... | 723. 86 |
| Mulberry, 4 miles west of, southeast corner of crossroads; iron post stamped "724"..... | 725. 398 |
| Mulberry, 5 miles west of, southeast corner of crossroads; spike in base of fence post, painted "724.6"..... | 724. 82 |
| Mulberry, 6.2 miles west of, in southwest point of five points in road; spike in fence post, marked "732.5"..... | 732. 76 |

WAUSEON QUADRANGLE.

[Latitude 41° 30'–41° 45'; longitude 84°–84° 15'.]

From point 3 miles east by 1 mile north of Lyons north to Ridgeville.

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|---|----------|
| Lyons, 3 miles east by 2 miles north of, at crossroads, at northwest corner of wooden culvert over stream; copper nail..... | 740. 89 |
| Lyons, 3 miles east by 3 miles north of, southeast corner of crossroads; iron post stamped "737"..... | 736. 994 |

Grand Rapids, Holland, Ionia, Jenison, Lowell, and Muir quadrangles.

BARRY, EATON, KENT, AND OTTAWA COUNTIES.

The elevations in the following list were determined by primary leveling based upon bench marks of the U. S. Corps of Engineers at Macatawa and Grand Rapids, and accord with the 1907 adjustment. The adopted mean elevation of Lake Michigan for the period 1860 to 1875 is 581.63 feet above mean sea level.

The leveling was done in 1911 by L. D. Townsend; additional leveling near Moline in Grand Rapids quadrangle was done in 1913 by E. C. Bibbee.

GRAND RAPIDS QUADRANGLE.

[Latitude 42° 45'–43°; longitude 85° 30'–85° 45'.]

From United States Army Engineers bench mark No. 9 along Market Street to Livingston Hotel (run twice).

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|---|-------------------|
| Grand Rapids, southwest of city, on south bank of Grand River west of Plaster Creek, 50 feet southwest of elm tree, about 0.5 foot under ground; top of cap on iron pipe 1½ inches in diameter (U. S. C. E. B. M. 9)..... | Feet. 596. 360 |
| Grand Rapids, southeast corner of Wealthy Avenue and Market Street, on curbing..... | 604. 65 |
| Grand Rapids, Pere Marquette R. R. crossing at Wealthy Avenue, 50 feet west of Nye Street; top of farthest rail east..... | 615. 00 |
| Grand Rapids, at southeast corner of Wealthy Avenue and South Division Street, on north side of lamp-post; top of nut to bolt fastening lamp-post to walk..... | 648. 10 |
| Grand Rapids, at monument square in front of Livingston Hotel, east of monument, granite stone surrounded by walk; copper bolt projecting 2 inches (city b. m. 1)..... | 645. 599 |

From Grand Rapids east along highway to Ada, thence along highway south to Cascade, thence west and south to St. Mary's Church, thence west to Troosts farm (west of Fisher station), thence north and east to Grand Rapids.

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|---|---------|
| Grand Rapids, Park Square, in top of stone marking astronomical station of Lake Survey of 1874; aluminum tablet stamped "655"..... | 654.531 |
| Grand Rapids, at northwest corner of East Fulton and Lafayette Streets, on curbing; chiseled square | 687.53 |
| Grand Rapids, at northwest corner of East Fulton, North Union and Lake Avenue intersection, on curbing at edge of walk; chiseled square..... | 720.48 |
| Grand Rapids, northwest corner of East Fulton Street and Lowell Avenue, on curbing at edge of walk; chiseled square..... | 743.18 |
| Grand Rapids, 2.5 miles east of, on East Fulton Street, 100 feet west of Lakeside Drive, on north side of road; iron post stamped "750" | 749.919 |
| Grand Rapids, 4 miles east of, at Y road (road west), on south side of tree standing north of road in fence line; copper nail in root, marked "790".. | 790.01 |
| Grand Rapids, 5.8 miles east of, at northeast corner of T road north, at northwest corner of Grand Rapids district No. 2 schoolhouse; iron post stamped "804"..... | 803.723 |
| Grand Rapids, 6.1 miles east of, at southeast corner of bridge over Grand Trunk Ry., at T road south; copper nail on beam holding floor, marked "789". | 788.87 |
| Grand Rapids, 6.1 miles east by 0.8 mile south of, at T road east, on south end of culvert across east road; chiseled square on stone, marked "768"..... | 767.92 |
| Grand Rapids, 6.5 miles east of, via Cascade road, at southeast corner of crossroads, in root of third tree from corner of yard of G. Gillette; copper nail marked "766"..... | 765.66 |
| Grand Rapids, 7 miles east of, at Van Houten Corners, at northeast corner of crossroads; iron post stamped "755"..... | 755.206 |
| Van Houten Corners, 0.5 mile north of, at northwest corner of crossroads, near wagon track; copper nail in stump, marked "789"..... | 788.64 |
| Ada, 2.5 miles west of, at T road north, in triangle formed by wagon roads; copper nail in stump, marked "778"..... | 778.31 |
| Ada, 1.5 miles west of, at T road south, at southeast corner of road; copper nail in root on north side of tree, marked "724"..... | 723.55 |
| Ada, 1.5 miles south by 0.5 mile west of, at T road west, on east side of road; copper nail in root of maple tree, being second tree south from walk in dooryard of A. Antonides, marked "675"..... | 675.03 |
| Cascade, at intersection of roads from Ada and Grand Rapids, at southwest corner of crossroads, at general store of S. Watterson, on stone at bottom at northeast corner of concrete steps; chiseled square marked "665"..... | 664.51 |
| Cascade, 1 mile west of, in front of H. De Good's house, north side of second tree from gate to east; copper nail in root of maple tree marked "773"..... | 773.25 |
| T. 6 N., R. 10 W., northeast corner of sec. 18, northeast corner of crossroads, diagonally opposite Cascade schoolhouse (district 8); iron post stamped "760"..... | 759.680 |
| T. 6 N., R. 10 W., northwest corner of sec. 19, at southwest corner of T road west, on top of rock near corner post in fence; chiseled square marked "782"..... | 782.28 |
| Cascade, 1.7 miles west by 2.5 miles south of, at T road east, center of line between secs. 29 and 30, T. 6 N., R. 10 W., on stone on outside of corner fence post; chiseled square marked "804"..... | 804.46 |
| T. 6 N., R. 10 W., southeast corner of sec. 30, at southwest corner of crossroads, on northwest corner of concrete steps of St. Mary's Catholic Church, on top of bottom step; chiseled square marked "804"..... | 804.185 |

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| St. Marys Church, 1 mile west of, at northwest corner of crossroads; copper nail in root on east side of elm tree marked "786"..... | Feet. 786. 32 |
| T. 6 N., R. 11 W., southeast corner of sec. 26, at northwest corner of crossroads, near fence corner; iron post stamped "722"..... | 722. 333 |
| T. 6 N., R. 11 W., line between secs. 27 and 34, at southwest corner of T road south, near telephone pole; chiseled square on stone marked "752" .. | 752. 05 |
| Fisher station, 4 miles east of, at northwest corner of T road north, 150 feet from intersection of roads, at southeast corner of church sheds (brick church on same corner); chiseled square on large white boulder marked "792" | 792. 11 |
| Fisher station, 2.5 miles east of, at Bylsma Corners, at southwest corner of crossroads, 20 feet west of corner of fence, on road side; iron post stamped "Prim. Trav. Sta. No. 17, 741"..... | 741. 245 |
| Fisher station, 0.2 mile north by 0.5 mile west of, at northeast corner, at junction of T road east with South Division Street (Grand Rapids) extended, on top of second fence post east from corner; copper nail marked "675" | 675. 37 |
| Fisher station, at Grand Rapids & Indiana Ry. crossing, north side of wagon road, 15 feet from west rail of main track, 150 feet south of station, in top of second post of five standing in an east-west line along north side of wagon road; copper nail marked "668" | 668. 70 |
| Fisher station, 0.5 mile west of, at northeast corner of T road east, near fence corner; iron post stamped "Prim. Trav. Sta. No. 18, 672"..... | 672. 082 |
| T. 6 N., R. 12 W., northwest corner of sec. 34, at southeast corner of crossroads, on top of concrete corner post in fence; chiseled square marked "729"..... | 728. 62 |
| Wentworth, 2 miles south by 0.5 mile east of, Troost's farm, at southeast corner of crossroads, in fence line, in root on north side of middle one of three oak trees; spike marked "719"..... | 719. 10 |
| Wentworth, 1 mile south by 0.5 mile east of, T. 6 N., R. 12 W., northeast corner of sec. 28, at southwest corner of T road west, in unused road in curve turning south; chiseled square on stone on ground marked "693" .. | 693. 13 |
| T. 6 N., R. 12 W., northwest corner of sec. 22, at southeast corner of crossroads, in front of schoolhouse (district 2, Wyoming) (New Hall); copper nail in root of pine tree marked "642"..... | 641. 71 |
| Wentworth, Lake Shore & Michigan Southern Ry. crossing; top of rail marked "640"..... | 640. 3 |
| Wentworth, 0.2 mile northwest of, at T road east, on west side of northwest-southeast road; iron post stamped "631"..... | 631. 265 |
| Ivanrest, on Grand Rapids, Holland & Chicago Electric Ry., top of north rail; marked "616"..... | 615. 74 |
| Ivanrest, 0.5 mile north of, at north corner of T road northeast, 50 feet south of and parallel to Pere Marquette R. R. (another parallel road lies north of track); copper nail in root of oak tree marked "612" | 612. 37 |
| Grand Rapids, 4 miles southwest of, in center of road, crossing of Lake Shore & Michigan Southern Ry.; top of east rail marked "608"..... | 608. 33 |
| Grand River, under Lake Shore & Michigan Southern Ry. bridge; surface of water June 7, 1911..... | 588 |
| Grand Rapids, 3 miles west of, at plaster quarries, west of private road leading to American Cement Co., on bridge across creek; chiseled square on south concrete abutment marked "614"..... | 614. 22 |

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| Grand Rapids, 4 miles west of, at southeast corner of school yard (district 2, Walker), on north side of road, 100 feet east of T road south; iron post stamped "646 Prim. Trav. Sta. No. 10"..... | Feet 646.033 |
| Kinney's Corners, at northeast corner of crossroads, at west side of mail-box post; chiseled square on stone marked "738"..... | 738.18 |
| Grand Rapids, 4 miles west of, at northwest corner of crossroads, at edge of road, 3 feet northeast of telephone pole; chiseled square on stone marked "754"..... | 753.96 |
| Grand Rapids, 2.5 miles west of via West Bridge Street, at northeast corner of "Smith's greenhouse" corners, opposite district 7 schoolhouse, on northwest corner between footpath and road; iron post stamped "758".... | 758.204 |
| Grand Rapids, Bridge Street station, crossing of Grand Rapids & Indiana Ry. and West Bridge Street, on same corner as station, in center line of sidewalk; top of farthest rail west marked "608"..... | 608.38 |

From Reeds Lake south to point 4 miles east of Fisher station.

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| Reeds Lake; surface of water June 10, 1911..... | 732 |
| Reeds Lake, southwest corner of, at T road south from Lake Avenue Consumers' Ice houses to head of road north, 20 feet north of walnut tree and 25 feet south of hickory tree, southwest corner of road; copper nail in root of elm tree, marked "756"..... | 756.40 |
| Grand Rapids, 3 miles east of along Hall Street extended, at southwest corner of T road west; copper nail in gnarled root of maple tree, marked "758"..... | 757.90 |
| Grand Rapids, 3 miles east of along Burton Avenue from South Division Street, in corner of crossroads (Halls Corners); chiseled square on top step of concrete porch to schoolhouse standing at northeast corner of road, marked "769"..... | 768.84 |
| Reeds Lake, 2.5 miles south of lake, at northeast corner of crossroads, southwest corner of sec. 10, T. 6 N., R. 11 W.; chiseled square on southwest corner of schoolhouse steps, marked "735"..... | 735.13 |
| Reeds Lake, 3.2 miles south of lake, in concrete abutment to bridge over Plaster Creek, on top of vertical reinforcement I iron (the one nearest bridge), marked "679"..... | 679.28 |
| Reeds Lake, 4.8 miles south of lake, at northeast corner at T road north, 7 feet west of two mail boxes, home of James W. Bowen, on south side of road; chiseled square on stone, marked "777"..... | 776.47 |
| Fisher station, 4 miles east by 1 mile north of, at southeast corner of T road south; copper nail in top of corner fence post, marked "777"..... | 776.80 |

From Grand Rapids south on Division Street to Fisher station.

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| Grand Rapids, southwest corner of South Division and Hall streets, on curbstone; chiseled cross marked "657"..... | 656.56 |
| Grand Rapids, at southwest corner of South Division Street and Burton Avenue, at edge of walk; chiseled square on curbing, marked "688".... | 687.53 |
| Grand Rapids, 1 mile south of Burton Avenue on South Division Street, 300 feet south of Michigan Central R. R. crossing, at southwest corner of crossroads, on outside of fence, near two telephone poles; iron post stamped "656"..... | 655.625 |
| Goodwin's Corners, northeast corner of crossroads, on grounds of school (district 6, Paris and Wyoming), on top of stump of telephone pole projecting 2½ feet above ground; copper nail marked "680"..... | 679.78 |
| Smith's Corners on South Division Street, at northeast corner of crossroads; copper nail in root on west side of third maple tree from south, marked "682"..... | 681.76 |

From Troosts farm (west of Fisher station) south along highway to Herps, thence east to Caledonia, thence north to St. Mary's Church.

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| Byron Center, 3.5 miles north of, on east side of road at T road west, northwest corner of school yard, under maple tree; iron post stamped "730" .. | Feet. 730.377 |
| Byron Center, 1.5 miles north of, at northeast corner of crossroads, near corner post in fence; chiseled square on highest point of bowlder, marked "698" | 697.85 |
| Byron Center, 1 mile north of, at northeast corner of crossroads; copper nail in top of corner fence post, marked "716" | 715.99 |
| Byron Center, at town hall, at southeast corner of road, 500 feet east of Lake Shore & Michigan Southern Ry. station, at northwest corner of top of concrete step at front of building; aluminum tablet stamped "757" .. | 757.081 |
| Byron Center, 1 mile south of, 100 feet west of crossroads, at Lake Shore & Michigan Southern Ry., on south side of wagon road on north long tie in cattle guard; copper nail in top of east end, marked "718" | 718.52 |
| Herps, road crossing at railway station; top of rail | 692 |
| Herps, 0.2 mile east of, northeast corner of crossroads, 3 feet northwest of telephone pole; iron post stamped "700" | 700.170 |
| T. 5 N., R. 12 W., southwest corner of sec. 36, 1 mile south by 1 mile west of Corinth, at center of crossroads, on top of stone marking section corner; chiseled square marked "783" | 782.90 |
| T. 5 N., R. 12 W., southeast corner of sec. 36, at center of crossroads, on county line, on top of stone marking section corner; chiseled cross marked "782" | 782.13 |
| Corinth, at northeast corner of crossroads, between corner post of fence and telephone pole, southwest corner of sec. 30, T. 5 N., R. 11 W.; iron post stamped "806" | 805.921 |
| T. 5 N., R. 11 W., southeast corner of sec. 30, center of T road south; chiseled square on top of stone marking section corner, marked "850.5" .. | 850.54 |
| Corinth, 2 miles east of, 300 feet south of southeast corner of crossroads, on top steps of schoolhouse, 2 feet north of door; chiseled square marked "865.5" | 865.54 |
| Corinth, 2.5 miles east by 1 mile south of, northwest corner of crossroads, on county line, near fence; iron post stamped "Prim. Trav. Sta. No. 19, 860" | 860.094 |
| T. 5 N., R. 11 W., southeast corner of sec. 34, at northwest corner of T road north, on top of corner post in fence; copper nail marked "881.2" | 881.26 |
| T. 4 N., R. 11 W., northeast corner of sec. 2, southwest corner of crossroads, on stone under the farther east of two mail boxes; chiseled square marked "833.2" | 833.20 |
| T. 5 N., R. 11 W., southeast corner of sec. 36, northwest corner of crossroads, near corner fence post; iron post stamped "Prim. Trav. Sta. No. 20, 797" | 797.470 |
| Caledonia, 1.5 miles south of, at northeast corner of crossroads, in root on west side of wild cherry tree; copper nail marked "800.9" | 800.94 |
| Caledonia, 0.5 mile south of, at T road east, in center of road; chiseled square on large stone, marked "813.8" | 813.90 |
| Caledonia, at southwest corner of school yard, under maple tree, near walk at head of T road south; iron post stamped "844" | 844.037 |
| Caledonia, 0.8 mile north by 0.2 mile west of, at Michigan Central R. R. crossing, 200 feet north of T road west, on top of bolt head to bond plate on north side of north rail, on first nut west of plank crossing, marked "802.4" | 802.52 |

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| T. 5 N., R. 10 W., southeast corner of sec. 18, at northwest corner of crossroads, 200 feet north of crossing, 6 feet southeast of corner fence post in cemetery, opposite a schoolhouse on northeast corner, and church on southwest corner, and near Mennonites Church, 4 feet west of telephone pole; iron post stamped "807"..... | Feet. 806.750 |
| T. 5 N., R. 10 W., southwest corner of sec. 8, northeast corner of crossroads; copper nail in top of corner fence post, marked "832.4"..... | 832.51 |
| T. 5 N., R. 10 W., northwest corner of sec. 8, southeast corner of crossroads, on concrete side to porch of schoolhouse (district 5, Caledonia), at north end of west railing; chiseled square marked "800"..... | 799.80 |
| T. 5 N., R. 10 W., northeast corner of sec. 6, southwest corner of crossroads, near north-south fence, 10 feet south of corner fence post; iron post stamped "780"..... | 779.654 |

From point 2.5 miles east of Fisher station south along highway to point 2 miles east of Corinth.

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| T. 6 N., R. 11 W., southwest corner of sec. 33, northeast corner of crossroads, on west side of large maple tree used as corner fence post; copper nail in root marked "763.9" | 763.95 |
| T. 5 N., R. 11 W., southeast corner of sec. 5, on south end of concrete culvert on west side, 150 feet north of crossroads; chiseled square marked "737.4" | 737.39 |
| T. 5 N., R. 11 W., southwest corner of sec. 9, at northeast corner of crossroads near east-west fence; iron post stamped "788" | 788.288 |
| T. 5 N., R. 11 W., northwest corner of sec. 21, at southwest corner of brick schoolhouse (district 3), southeast corner of crossroads; point on water table marked "814.2" | 814.17 |
| T. 5 N., R. 11 W., southwest corner of sec. 21, at northeast corner of road, opposite brick church on southeast corner, just outside corner post of cemetery; chiseled square on large boulder marked "891.8" | 891.73 |

Near Herps.

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| North Dorr, 1 mile east of, at northwest corner of T road north, 20 feet west of center of north road; chiseled square on top of large boulder marked "755.5" | 755.56 |
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From Caledonia southeast along wagon road 2.2 miles.

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| Caledonia, 2.2 miles southeast of, at southeast corner of railway crossing with east-west road, at southwest end of tie, the only one sticking out of cinder bed, 5.5 feet north of corner post in right of way fence; copper nail marked "814.5" | 814.55 |
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From Herps to point near Moline.

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| Herps, 1.2 miles east of, southeast corner of crossroads, on county line, in top of end of brace pole at corner fence post; copper nail marked "741" | 740.73 |
| Corinth, 1 mile south by 1 mile west of, southwest corner of sec. 36, T. 5 N., R. 12 W., center of crossroads, on top of stone marking section corner; chiseled square | 782.90 |
| Moline, 2 miles north of, on line between Kent and Allegan counties, on west abutment south side of bridge, 30 feet east of Grand Rapids & Indiana Ry.; chiseled square painted "764.7" | 764.83 |

HOLLAND QUADRANGLE.

[Latitude 42° 45'–43°; longitude 86°–86° 15'.]

From Macatawa (Ottawa Beach) east along highway to sec. 31, T. 5 N., R. 14 W.

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| Macatawa, on light keeper's residence, on top of horizontal shoulder in second stone 2.18 feet from northwest corner, 0.38 foot below bottom of baseboard, in top course in north foundation wall; notch (U. S. Corps of Engineers' b. m.)..... | Feet. 590.064 |
| Three-foot mark on gage (U. S. Corps of Engineers' elevation, 584.630).... | 584.63 |
| Macatawa, at U. S. life-saving station, on concrete inclined entrance to boathouse, about 6 inches from southwest corner of south wing of station, at extreme east edge of entrance, 7 feet south of double doors; aluminum tablet stamped "588 1911"..... | 588.036 |
| Macatawa, 1.9 miles east of U. S. life-saving station, on south shore of Black Lake, on south side of road, at southeast corner of T road south; chiseled square on large limestone block marked "592.6"..... | 592.61 |
| Macatawa, 4 miles east of U. S. life-saving station, at T road running south from Lake road, on south side of Black Lake; copper nail in large poplar stump north of road marked "604.2"..... | 604.26 |
| Holland, on Sixteenth Street, 11 feet north of southeast corner of Holland Shoe Co.'s factory; in east foundation wall, in seventh stone from corner in top tier; aluminum tablet stamped "607"..... | 607.378 |
| T. 5 N., R. 15 W., northeast corner of sec. 34, southwest corner of crossroads, in top of platform to hold milk cans, at northeast corner; copper nail marked "665.6"..... | 665.63 |
| T. 5 N., R. 15 W., southwest corner of sec. 26, at northeast corner of crossroads, near telephone pole; iron post stamped "660"..... | 660.240 |
| T. 5 N., R. 15 W., northeast corner of sec. 35, west of T road south, on top of southeast abutment, 2 feet from east end of bridge (road jogs here, running 500 feet north to avoid creek); chiseled square marked "595.0"..... | 595.02 |
| T. 5 N., R. 15 W., northeast corner of sec. 36, southwest corner of crossroads, near outside wagon track; chiseled square on stone in ground marked "606.4"..... | 606.48 |
| T. 5 N., R. 14 W., northeast corner of sec. 31, south of road at T road running northeast a short distance, then north, west of creek, at east end of gravel pit; iron post stamped "631"..... | 630.924 |

IONIA QUADRANGLE.

[Latitude 42° 45'–43°; longitude 85°–85° 15'.]

From Carlton east along highway to Sunfield.

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| T. 4 N., R. 8 W., northwest corner of sec. 12, at southeast corner of crossroads, 8 feet east by 3 feet north of corner fence post, opposite schoolhouse (Carlton 1885, district 7) on southwest corner; chiseled square on top of boulder marked "861.7"..... | 861.78 |
| T. 4 N., R. 8 W., southeast corner of sec. 1, 3 feet south of corner post in fence, northwest corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 23, 851, Mich., 1911"..... | 851.479 |
| T. 4 N., R. 7 W., southwest corner of sec. 5, at northeast corner of crossroads, opposite church on northwest corner and schoolhouse on southwest corner; at end of culvert crossing east-west road; chiseled square on top of stone marked "821.1"..... | 821.24 |
| T. 4 N., R. 7 W., corner of secs. 5, 4, 8, and 9, at T road south, on top of stone set in center of junction marking section corner; chiseled square marked "838.3"..... | 838.39 |

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|---|-----------------|
| T. 4 N., R. 7 W., southwest corner of sec. 3, at northeast corner of crossroads, southeast corner of school yard (North Jordan school), 3 feet south by 3 feet east of southwest corner of wood house; iron post stamped "863" | Ft. 863. 325 |
| T. 4 N., R. 7 W., southwest corner of sec. 2, at northeast corner of crossroads, 3 feet from corner post; on top of large boulder inside fence; chiseled square marked "878.8" | 878. 98 |
| Woodbury, 0.5 mile south by 1 mile west of, at northeast corner of crossroads, 5 feet east by 3 feet south of concrete corner post in fence (mail box on this post and evergreen hedge ends here), near J. J. Echert's home, opposite schoolhouse on northwest corner; iron post stamped "Prim. Trav. Sta. No. 24, 1911, 885" | 884. 662 |
| T. 4 N., R. 7 W., southeast corner of sec. 1, northwest corner of crossroads, 20 feet north of corner fence post, 4 feet from fence; chiseled cross in square on top of large boulder marked "877.6" | 877. 72 |
| Woodbury, 1.5 miles east by 0.5 mile south of, at northeast corner of crossroads, east-west road crosses road running northwest-southeast, at southeast corner of school yard, 5 feet south of corner fence post; iron post stamped "841" | 841. 574 |
| Woodbury, 2.5 miles east by 0.5 mile south of, at northwest corner of crossroads, at edge of wire fence, 4 feet from corner fence post; chiseled square on stone marked "846.7" | 846. 82 |
| T. 4 N., R. 6 W., northeast corner of sec. 9, southwest corner of crossroads, on root on north side of butternut tree; with copper nail in it, marked "853.2" | 853. 33 |

JENISON QUADRANGLE.

[Latitude 42° 45'-43°; longitude 85° 45'-86°.]

From sec. 31, T. 5 N., R. 14 W., east along highway to North Dorr.

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| T. 5 N., R. 14 W., northwest corner of sec. 33, at southeast corner of T road south; copper nail in root on northwest side of sycamore tree, marked "612.5" | 612. 59 |
| Drenthe, at northeast corner of school yard, on south side of road, 200 feet east of crossroads, 3 feet south by 2 feet west of north end of board fence between school and church; iron post stamped "665" | 664. 604 |
| Drenthe, 2 miles east of, at northeast corner of crossroads, on north end of 8-inch steel culvert running across east-west road; chiseled cross battered in threads, marked "712.6" | 712. 69 |
| T. 5 N., R. 14 W., southeast corner of sec. 30, at northwest corner of crossroads, 6 feet north of corner fence post; iron post stamped "677" | 676. 956 |
| Drenthe, 4 miles east of, at southeast corner of crossroads, on extreme south end of southwest corner of L-shaped concrete abutment to sluiceway across east-west road; chiseled square marked "679.6" | 679. 73 |
| Gitchel crossroads, general store of Speck Van Der Kolk at northwest corner, 1 foot west of southeast corner of concrete steps; chiseled square marked "705.7" | 705. 80 |
| T. 5 N., R. 13 W., southwest corner of sec. 26, at northeast corner of crossroads and 5 feet north of corner fence post; iron post stamped "704" | 703. 892 |
| Diamond schoolhouse, southeast of, just north of center of road at crossroads; chiseled square on blue stone set in road, marked "744.1" | 744. 15 |
| North Dorr, 2 miles west of, on Ottawa-Allagan county line, on section corner stone in center of crossroads; chiseled cross in square, marked "U.S. 768.3" | 768. 41 |

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| North Dorr, 1 mile west of, at northwest corner of crossroads, 3 feet west of telephone pole; iron post stamped "786"..... | Feet. 786.520 |
| North Dorr, at southwest corner of crossroads, 6 feet east of corner post in fence about Catholic Church yard; chiseled square on highest point of large boulder, marked "766.6"..... | 766.69 |

LOWELL QUADRANGLE.

[Latitude 42° 45'–43°; longitude 85° 15'–85° 30'.]

From Ada north across Grand River (a small circuit).

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|---|---------|
| Ada, at back of schoolhouse, on top of concrete steps leading to second story; aluminum tablet stamped "684"..... | 683.776 |
| Ada, at southeast corner of crossroads, 100 feet east of bridge of Grand Trunk Ry. over road running east-west (Masonic Temple on northeast corner); chiseled square on outer edge of sidewalk, marked "640"..... | 639.48 |
| Ada, 0.8 mile east of, at southwest corner of crossroads, on east bank of Grand River, on top of first post in railing east of bridge; copper nail marked "638"..... | 637.66 |
| Ada, east of; surface of water in Grand River June 14, 1911..... | 613 |
| Ada, 0.8 mile east by 1.7 miles north of, at southeast corner of crossroads, 20 feet north of Honey Creek bridge; highest point on large stone, marked "715"..... | 715.41 |
| T. 7 N., R. 10 W., southwest corner of sec. 14, south of T road west; chiseled square on stone in bank, marked "832"..... | 831.89 |
| T. 7 N., R. 10 W., northeast corner of sec. 21, at southeast corner of T road west, on top of corner post in fence; copper nail marked "726.8"..... | 726.68 |
| Ada, 2.5 miles northwest of, at northeast corner of junction of road from north with road on northeast side of Grand River; chiseled square on stone under walnut tree, marked "637"..... | 636.97 |
| Ada, 0.8 mile east by 1.25 miles northwest of, on river road on northeast side of Grand River, east corner of junction of T road northeast, on large boulder 100 feet east of crossing; chiseled square marked "641"..... | 641.27 |

From point near Parmelee east along highway to Carlton.

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| Caledonia, 3 miles southeast of, northeast of crossing of Michigan Central R. R. with road running north-south; top of center one of three iron stakes holding plank to prevent earth from sliding into ditch, marked "794.6"..... | 794.72 |
| Parmelee, road crossing on Michigan Central R. R.; top of rail, marked "771.8"..... | 771.9 |
| Parmelee, 0.4 mile west of, at southeast corner of crossroads, near corner post in fence, opposite schoolhouse on northeast corner and United Brethren Church on northwest corner; iron post stamped "789"..... | 788.683 |
| Parmelee, 0.8 mile east of, 0.2 mile east of Thornapple River, on north side of T road west, 100 feet west of north-south road, at farm house of J. L. Boughton "Riverside Farm;" chiseled cross on top of stone hitching post, marked "724.7"..... | 724.81 |
| Parmelee, 1.7 miles east of, at southwest corner of crossroads, on northeast corner of top of concrete step to schoolhouse facing east; chiseled square, marked "783.3"..... | 783.37 |
| T. 4 N., R. 9 W., southwest corner of sec. 6, at northeast corner of crossroads, about 4 feet south by 6 feet east of corner post; iron post stamped "773"..... | 773.236 |

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| T. 4 N., R. 9 W., southwest corner of sec. 5, at northeast corner of crossroads where road south jogs to east, at edge of wagon track; chiseled square on top of large boulder, marked "866.3" | Feet. 866.44 |
| T. 4 N., R. 9 W., southwest corner of sec. 4, at head of T road west, at east edge of road, big maple tree stands in triangle of roads; chiseled square on northwest end of large stone, marked "947.8" | 947.93 |
| T. 4 N., R. 9 W., quarter corner on east side of sec. 5, on west side of T road east, 40 feet north of intersection, 5 feet northwest of 8-inch oak tree; iron post stamped "859" | 858.718 |
| T. 4 N., R. 9 W., at center of sec. 3, southeast corner of crossroads, at north end of porch and close to west wall; chiseled square on top concrete step of Irving schoolhouse (district 7), marked "822.2" | 822.30 |
| Freeport, 1.5 miles west by 0.5 mile south of, at head of T road west, east side of road and a little north of junction; copper nail in root on west side of 30-inch maple tree, marked "811.1" | 811.23 |
| Freeport, 1.5 miles west by 1 mile south of, at southeast corner of crossroads (road west very poor); copper nail in top of corner fence post, marked "816.2" | 816.36 |
| Freeport, 0.8 mile west by 1 mile south of, southwest corner of crossroads, 10 feet northeast of fence corner, 3 feet south of mail box post (the more eastern of two); iron post stamped "Prim. Trav. Sta. No. 22, 829" | 829.236 |
| T. 4 N., Rs. 8 and 9 W., 1 mile south of Freeport, at crossroads (east-west road jogs 100 feet to north), the Pere Marquette R. R. property line ends here; chiseled square on stone in west wagon track, marked "818.7" | 818.84 |
| Freeport, 1 mile east by 1 mile south of, at crossroads, in triangular grass plot, on north side of tree (road to east jogs 50 feet to south here); copper nail in notch cut in root of 36-inch maple tree, marked "801.1" | 801.24 |
| T. 4 N., R. 8 W., southwest corner of sec. 5, at northeast corner of crossroads; copper nail in top of corner fence post, marked "813.1" | 813.24 |
| T. 4 N., R. 8 W., northeast corner of sec. 9, at southwest corner of crossroads, on school grounds of Carlton schoolhouse (district 10), 75 feet west of crossing, in line with telephone poles and about halfway between the first two to west; iron post stamped "820" | 819.784 |

MUIR QUADRANGLE.

[Latitude 42° 45'–43°; longitude 84° 45'–85°.]

From Sunfield east along highway to Grand Ledge.

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| T. 4 N., R. 6 W., northeast corner of sec. 10, at southwest corner of crossroads, 3 feet north by 3.5 feet west of corner fence post, 4 feet west of sidewalk; iron post stamped "Prim. Trav. Sta. No. 25, 858, 1911" | 858.066 |
| T. 4 N., R. 6 W., southeast corner of sec. 2, southeast corner of concrete porch to schoolhouse standing at northwest corner of crossroads and facing south; chiseled square marked "866.1" | 866.21 |
| Sunfield, 0.5 mile south by 1.8 miles east of, at southwest corner of crossroads, west end of concrete end of bridge across north-south road; chiseled square on highest point marked "827.3" | 827.48 |
| T. 4 N., R. 5 W., southwest corner of sec. 5, northeast corner of crossroad, 4 feet south of east-west fence and 10 feet east of corner fence post; iron post stamped "848 1911" | 848.128 |
| T. 4 N., R. 5 W., southwest corner of sec. 4, at northeast corner of T road north, on stone sunk in ground 3 feet north of north track of east-west road, 20 feet south of 8-inch elm tree; chiseled square marked "865.5" .. | 865.65 |

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| Mulliken, 0.5 mile south of, at southeast corner of crossroads, northwest corner of school yard (Roxana, district 2), 2 feet northeast of 6-inch poplar tree, 15 feet east of concrete sidewalk; iron post stamped "Prim. Trav. Sta. No. 26, 870, 1911"..... | Feet. 870.551 |
| T. 4 N., R. 5 W., southeast corner of sec. 3, northwest corner of crossroads, in edge of road, at west end of culvert across north-south road, in row of stones across road; chiseled square on highest point of large stone, marked "871.2"..... | 871.41 |
| T. 4 N., R. 5 W., southwest corner of sec. 1, at northeast corner of crossroads, on highest point of large boulder lying farthest south of four along outside of road as it curves to north; chiseled square marked "872.4"..... | 872.53 |
| T. 4 N., R. 4 W., southwest corner of sec. 6, northeast corner of crossroads, 20 feet north of creek and 3 feet west of rail fence; iron post stamped "854 1911"..... | 854.459 |
| T. 4 N., R. 4 W., northeast corner of sec. 7, at southwest corner of crossroads, in northeast corner of Free Methodist Church yard, 4 feet east of telephone pole; iron post stamped "Prim. Trav. Sta. No. 2, 875, 1909"..... | 875.286 |
| T. 4 N., R. 4 W., 60 feet east of northwest corner of sec. 9, south side of road in end of unused culvert (creek turns east here along road); chiseled square on large stone, marked "879.4"..... | 879.60 |
| T. 4 N., R. 4 W., northwest corner of sec. 10, southeast corner of crossroads; chiseled square on highest point of large flat boulder, marked "867.8"..... | 867.96 |
| Grand Ledge, at west city limits, on Jefferson Avenue running east-west, at southeast corner of crossroads, 4 feet northwest of telephone and power line poles which stand side by side in edge of road; chiseled cross on highest point of large stone, marked "850.4"..... | 850.56 |
| Grand Ledge, at north corner of Jackson and East Scott streets, on top of fire plug, on the one to south of two nuts holding top on, marked "848.6"..... | 848.75 |
| Centerville, Coldwater, Kalamazoo, Reading, Schoolcraft, Sturgis, and Wayland quadrangles. | |

ALLEGAN, BRANCH, HILLSDALE, KALAMAZOO, AND ST. JOSEPH COUNTIES.

The elevations in the following list were determined by primary leveling, extended from bench marks established in 1911 on Grand Rapids and Edon quadrangles, and accord with Bulletin 461.

The leveling was done in 1913 in Kalamazoo, Schoolcraft, and Wayland quadrangles by E. C. Bibbee; in Coldwater, Reading, and Sturgis quadrangles by R. G. Clinite; and in Centerville quadrangle by Bibbee and Clinite.

CENTERVILLE QUADRANGLE.

[Latitude 41° 45'-42"; longitude 85° 30'-85° 45'.]

From point near Moore Park south along Lake Shore & Michigan Southern Ry. to Three Rivers, thence east along highway to Centerville, thence south along highways to Klinger, thence east 1 mile.

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| Moore Park, 2 miles south of, about 0.4 mile west of southeast corner of sec. 31, T. 5 S., R. 11 W., in base of telegraph pole; rail spike, marked "827.8"..... | Feet. 828.00 |
| Three Rivers, 2 miles north of, near northeast corner of NW. $\frac{1}{4}$ sec. 7, T. 6 S., R. 11 W., at southeast corner of crossroads, in root of 2-foot maple tree; rail spike..... | 821.34 |

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| Three Rivers, in north side of Lafayette Park on Main Street, opposite schoolhouse; iron post stamped "820"..... | Feet. 820.592 |
| Three Rivers, Lake Shore & Michigan Southern Ry. station, 400 feet south of, on west side of south abutment of iron bridge over St. Joseph River; chiseled square, marked "798.3"..... | 798.53 |
| St. Joseph River, below dam at railroad bridge; surface of water Sept. 29, 1913..... | 785.7 |
| Three Rivers, crossing of Lake Shore & Michigan Southern and Michigan Central railroads; top of rail..... | 801.0 |
| Three Rivers, on east side of south abutment of wagon bridge over St. Joseph River; chiseled square, marked "801.7"..... | 802.01 |
| St. Joseph River, above dam; surface of water..... | 793.7 |
| Three Rivers, 2 miles east of, 150 feet west of C. Rammelic residence, south end of tile 5 feet north of south road line; highest point marked "812.4"..... | 812.64 |
| Three Rivers, 3.2 miles east of, on south side of road, 700 feet west of D. O. Young residence, in root of oak tree; nail head..... | 825.30 |
| Centerville station, 2 miles west by 0.5 mile north of, near southeast corner of sec. 15, T. 6 S., R. 11 W.; iron post stamped "825"..... | 825.684 |
| Centerville station, 2 miles west of, 120 feet south of railroad, at southeast corner of T road east, on large granite boulder; highest point marked "826.1"..... | 826.37 |
| Centerville station, 0.99 mile west of, on line between secs. 23 and 24, on north side of public road, on concrete base for post; chiseled square marked "833.5"..... | 833.80 |
| Centerville station, 120 feet east of, 27 feet south of railroad, on east side of public road, 4 feet south of railroad-crossing sign, in top of 10 by 10 inch post level with ground; rail spike..... | 822.54 |
| Prairie River; surface of water October 1, 1913..... | 800 |
| Centerville, 4 feet east of north entrance to county courthouse; iron post stamped "826"..... | 826.353 |
| Centerville, 0.84 mile south of, at northeast corner of sec. 36, T. 6 S., R. 11 W., on large granite boulder, 4 feet north of south fence line; chiseled square marked "854.4"..... | 854.62 |
| Velevee Lakes; surface of water October 1, 1913..... | 855 |
| Centerville, 1.88 miles south of, at southwest corner of sec. 31, T. 6 S., R. 10 W., on east side of road opposite T road west, on large granite rock; chiseled square marked "868.0"..... | 868.25 |
| Centerville, 1.88 miles south by 0.5 mile west of, 25 feet south of northwest corner of NE. $\frac{1}{4}$ sec. 1, T. 7 S., R. 11 W., in base of telephone pole; 60-penny spike marked "853.7"..... | 853.94 |
| Centerville, 2.88 miles south by 0.5 mile west of, at southwest corner of SE. $\frac{1}{4}$ sec. 1, T. 7 S., R. 11 W., in corner fence post; rail spike marked "884.6"..... | 884.85 |
| Centerville, 3.88 miles south by 0.5 mile west of, near northeast corner of NW. $\frac{1}{4}$ sec. 13, T. 7 S., R. 11 W., on large granite boulder, 3 feet west of south end of culvert; chiseled square marked "892.3"..... | 892.54 |
| Centerville, 4.88 miles south of, 30 feet south by 23 feet west of northeast corner of NW. $\frac{1}{4}$ sec. 24, T. 5 S., R. 11 W.; iron post stamped "838".... | 838.228 |
| Centerville, 5.84 miles south of, near northwest corner of NE. $\frac{1}{4}$ sec. 26, T. 7 S., R. 11 W., 25 feet south of southeast corner of crossroads, 2 feet east of east line of road, in top of 2-foot stump; 60-penny spike..... | 834.47 |
| Centerville, 6.84 miles south of, 60 feet north of southwest corner of SE. $\frac{1}{4}$ sec. 26, T. 7 S., R. 11 W., in base of telephone pole; rail spike..... | 858.34 |

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| Centerville, 8 miles south of, 100 feet north of Charles Miller's cottage on Klinger Lake, on west side of south abutment of iron bridge over inlet to Klinger Lake; chiseled square marked "809.4"..... | Feet. 809.70 |
| Klinger Lake; surface of water October 4, 1913..... | 807.0 |
| Klinger station, 0.67 mile north of, about 0.25 mile south of northwest corner of sec. 6, T. 8 S., R. 10 W., on south side of east abutment of concrete culvert opposite T road west; chiseled square..... | 847.30 |
| Klinger station, 600 feet northeast of, in southwest angle of crossroads, 2 feet south of corner post, about 0.1 mile south of northeast corner of sec. 12, T. 8 S., R. 11 W.; iron post stamped "858 Mich."..... | 858.564 |
| Klinger station, 1.1 miles east of, in northwest angle at crossing of Lake Shore & Michigan Southern Ry. and highway, in base of crossing post; rail spike..... | 874.05 |
| From Centerville along highways north and west to Fisher Lake, thence south to point 4 miles east of Three Rivers. | |
| Centerville station, 120 feet east of, 27 feet south of railroad, on east side of public road, 4 feet south of railroad-crossing sign, in top of 10 by 10 inch post level with ground; rail spike..... | 822.54 |
| T. 6 S., R. 10 W., near quarter corner on north side of sec. 19, 1 mile north by 0.5 mile east of Centerville, in southeast angle of crossroads, at fence corner, in charred osage stump; copper nail..... | 834.20 |
| T. 6 S., R. 10 W., quarter corner on west side of sec. 17, 1.5 miles north by 1 mile east of Centerville, in northeast angle of road forks, in southwest corner of yard of Wilcox School, in root of 30-inch oak tree; copper nail..... | 836.54 |
| T. 6 S., R. 10 W., at southeast corner of sec. 6, in northwest angle of T road west, 10 feet north of corner post; iron post stamped "870 Mich."..... | 870.656 |
| Bridge over St. Joseph River, east side of north span, on concrete girder; painted square..... | 832.23 |
| St. Joseph River, under bridge; surface of water December 11, 1913..... | 825.7 |
| T. 6 S., R. 10 W., sec. 6, at center of, in northeast angle of T road north, 5 feet west of corner of rail fence, in root of twin-oak tree; copper nail..... | 838.93 |
| T. 5 S., R. 10 W., sec. 31, quarter corner on south side of, in northeast angle of T road east, 10 feet north of corner post, in top of peg; copper nail.... | 837.45 |
| T. 5 S., R. 10 W., sec. 30, quarter corner on south side of, in northeast angle of crossroads, top of concrete base of corner post; raised part of letter "D". | 846.46 |
| T. 5 S., R. 11 W., sec. 36, quarter corner on north side of, in southeast angle of T road south, 30 feet east of corner post, in root of 16-inch maple tree; copper nail..... | 832.56 |
| T. 5 S., R. 11 W., sec. 25, at southwest corner of, 27 feet north by 30 feet east of center of crossroads, in school yard; iron post stamped "832 Mich."..... | 832.433 |
| T. 5 S., R. 11 W., sec. 2, at southeast corner of, 35 feet north by 16 feet west of center of crossroads, in root of 20-inch oak tree; copper nail..... | 827.02 |
| T. 6 S., R. 11 W., sec. 3, 0.25 mile north of quarter corner on east side of, 45 feet south by 25 feet west of center of T road east, in root of 16-inch white-oak tree; copper nail..... | 832.42 |
| T. 6 S., R. 11 W., sec. 10, about 0.25 mile north by 0.25 mile east of center of, on east side at north end of steel highway bridge over St. Joseph River, at north end of steel girder; head of rivet..... | 808.99 |
| St. Joseph River, under above-named bridge; surface of water..... | 795.5 |
| T. 6 S., R. 11 W., sec. 10, at southeast corner of, 27 feet north by 30 feet west of center of T road east, in root of 18-inch maple tree; copper nail..... | 828.18 |

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| Centerville station, 2 miles west by 0.5 mile north of, near southeast corner of sec. 15, T. 6 S., R. 11 W., in northwest angle of crossroads, 5 feet west of corner post; iron post stamped "825 Mich."..... | Feet. 825.684 |
| From Three Rivers west along highways 1.5 miles, thence north 2.5 miles, thence west to sec. 31, T. 5 S., R. 12 W., thence south and southeast over devious route to Constantine, thence northeast and east to point 3 miles south of Centerville. | |
| Three Rivers, in north side of Lafayette Park, on Main Street opposite schoolhouse; iron post stamped "820 Mich."..... | 820.592 |
| Three Rivers, 1.5 miles west by 0.4 mile north of, northwest corner of T. 6 S., R. 12 W., sec. 13, opposite T road north, 16 feet east of corner post, in base of telephone anchor post; rail spike..... | 838.24 |
| T. 6 S., R. 12 W., sec. 1, at southwest corner of, 25 feet east of center of T road west, in stump of scrub oak; copper nail..... | 831.00 |
| T. 6 S., R. 12 W., sec. 2, quarter corner on east side of, in southwest angle of crossroads, in root of 14-inch lone elm tree; copper nail..... | 829.43 |
| T. 5 S., R. 12 W., sec. 36, quarter corner on west side of, in northeast angle of crossroads, 7 feet north of corner post; iron post stamped "835 Mich.".. | 834.922 |
| T. 5 S., R. 12 W., sec. 34, quarter corner on east side of, 35 feet east by 27 feet north of center of T road north, in root of 30-inch oak tree; copper nail..... | 871.80 |
| T. 5 S., R. 12 W., sec. 33, quarter corner on east side of, in northwest angle of T road north, at southeast corner of yard of Mount Zim school, in root of 10-inch maple tree; copper nail..... | 930.26 |
| T. 5 S., R. 12 W., sec. 33, quarter corner on west side of, in northeast angle of crossroads, 20 feet east of corner post, 2.5 feet west of 20-inch oak tree, in top of stump; copper nail..... | 978.27 |
| T. 5 S., R. 12 W., sec. 31, quarter corner on east side of, 12 feet south by 30 feet west of center of T road east, in root of 5-inch oak tree; copper nail.. | 922.57 |
| T. 5 S., R. 12 W., sec. 32, at northwest corner of, in southeast angle of crossroads, 10 feet east of corner post; iron post stamped "926 Mich.".. | 926.111 |
| Tps. 5 and 6 S., R. 12 W., corner of secs. 31, 32, and 5, 6; painted circle on corner stone..... | 912.90 |
| T. 6 S., R. 12 W., sec. 5, quarter corner on west side of, 40 feet south by 16 feet east of center of crossroads, in top of charred oak stump; copper nail.. | 929.17 |
| T. 6 S., R. 12 W., sec. 8, northwest corner of, in southeast angle of crossroads, 60 feet west of southwest corner of schoolhouse, in top of oak stump; copper nail..... | 985.49 |
| T. 6 S., R. 12 W., sec. 8, near southwest corner of, 27 feet south by 60 feet west of center of T road east, 600 feet north of north shore of Clear Lake, in root of 10-inch white-oak tree; copper nail..... | 897.88 |
| T. 6 S., R. 12 W., about 0.2 mile south of quarter corner on east side of sec. 18, in northwest angle of road forks, 15 feet west by 25 feet north of center of road intersection; iron post stamped "883 Mich."..... | 883.248 |
| T. 6 S., R. 12 W., sec. 20, 0.4 mile north of center of, 800 feet west of south end of Clear Lake, 100 feet northwest of silo in farmyard, on south side of turn in road, in root of 14-inch hickory tree; copper nail..... | 906.87 |
| T. 6 S., R. 12 W., sec. 16, 0.25 mile west by 0.25 mile south of center of, in northwest angle of crossroads, 4 feet south of corner post, on top of boulder; painted circle..... | 946.74 |
| T. 6 S., R. 12 W., sec. 21, at center of, in center of intersection of T road south, in root of 38-inch oak tree; rail spike..... | 913.31 |
| T. 6 S., R. 12 W., sec. 28, at center of, in northwest angle of road forks, in northeast corner of school yard, 3 feet north of corner post, 0.5 mile north of Fabius; iron post stamped "913 Mich."..... | 913.133 |

| | Feet. |
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| Fabius, in front of station; top of rail..... | 901. 1 |
| Fabius, 0.25 mile east of, in southwest angle of T road south, 5 feet east of corner post, in root of 20-inch elm tree; copper nail..... | 904. 23 |
| T. 6 S., R. 12 W., sec. 33, 450 feet north of southeast corner of, in southwest angle of T road south, 60 feet south by 10 feet west of center of road intersection, in top of stump; copper nail..... | 888. 68 |
| T. 7 S., R. 12 W., sec. 10, 190 feet south by 22 feet east of northwest corner of, in southeast angle of T road east, in top of 18-inch white-oak stump; copper nail..... | 896. 95 |
| T. 7 S., R. 12 W., sec. 9, 300 feet north of quarter corner on east side of, in northwest angle of road forks, 400 feet northwest of brick school-house, 3 feet north of corner post; iron post stamped "885 Mich."..... | 885. 649 |
| T. 7 S., R. 12 W., sec. 10, quarter corner on south side of, in northeast angle of road forks, south end of row of maple trees, in root of 13-inch maple tree; copper nail..... | 818. 69 |
| T. 7 S., R. 12 W., 0.2 mile south of quarter corner on east side of sec. 15, in northwest angle of crossroads, 2 feet north of corner post, in base of telephone pole; rail spike..... | 801. 11 |
| Constantine, southwest corner of intersection of upper Mottville road and North Washington Street, 2 feet south of corner post; iron post stamped "781 Mich."..... | 781. 838 |
| Constantine, south side of power house, below dam on St. Joseph River, at foot of race; surface of water, Nov. 26, 1913..... | 770. 6 |
| Lake Shore & Michigan Southern Ry. bench mark, in base of semaphore post; track spike (railroad elevation, 224.65)..... | 797. 56 |
| T. 7 S., R. 11 W., sec. 18, southwest corner of, 1.4 miles northeast of Constantine, in northeast angle of road forks, 3 feet east of corner post, in top of small stump; copper nail..... | 803. 58 |
| T. 7 S., R. 11 W., sec. 18, 0.25 mile west of quarter corner on north side of, in southeast angle of T road east, 40 feet south of corner post, in root of 20-inch sycamore tree; copper nail..... | 802. 22 |
| T. 7 S., R. 11 W., 0.25 mile west of quarter corner between secs. 6 and 7, 30 feet west of center of T road east, in root of 6-inch elm tree; copper nail.. | 800. 73 |
| T. 7 S., R. 11 W., sec. 5, in southwest corner of, at northeast corner of crossroads, in school yard, 4 feet north of telephone pole; iron post stamped "807 Mich."..... | 806. 905 |
| T. 7 S., R. 11 W., sec. 9, at northwest corner of, in southeast angle of crossroads, 5 feet north of corner post, in root of 16-inch oak tree; copper nail.. | 811. 78 |
| T. 7 S., R. 11 W., sec. 9, in northeast corner of, at southwest corner of crossroads, 20 feet south by 50 feet west of section corner, in root of 18-inch oak tree; copper nail..... | 815. 71 |
| T. 7 S., R. 11 W., sec. 3, in southeast corner of, in northwest angle of crossroads, 20 feet north by 35 feet west of section corner, 6 feet west of corner post; iron post stamped "825 Mich."..... | 825. 011 |
| T. 7 S., R. 11 W., sec. 2, in southeast corner of, in northwest angle of T road north, at fence corner, in base of 24-inch oak tree; copper nail..... | 900. 84 |
| Centerville, 2.88 miles south by 0.5 mile west of, in northeast angle of crossroads, quarter corner on south side of sec. 1, T. 7 S., R. 11 W., in corner fence post; rail spike..... | 884. 85 |

From Klinger station west along Lake Shore & Michigan Southern Ry. and highway to Mottville, thence northeast to Constantine.

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| Klinger station, 600 feet northeast of, in southwest angle of crossroads, 2 feet south of corner post, about 0.1 mile south of northeast corner of sec. 12, T. 8 S., R. 11 W.; iron post stamped "858 Mich." | Feet. 858. 564 |
| Klinger station, 1 mile west of, 180 feet southeast of Oakwood Crossing depot, 40 feet south of center of track of Lake Shore & Michigan Southern Ry., in root of chestnut tree; copper nail | 853. 52 |
| Klinger station, 2 miles west of, on north side of Lake Shore & Michigan Southern Ry. right of way, 920 feet east of milestone C 124, 13 feet east of north-south fence line, in top of pine stump; copper nail | 837. 55 |
| T. 8 S., R. 11 W., about 0.25 mile west of quarter corner on south side of sec. 3, in northwest angle of crossroads, in southwest corner of school yard, 3 feet north of corner post; iron post stamped "822 Mich." | 822. 267 |
| T. 8 S., R. 11 W., sec. 4, about 0.25 mile south of quarter corner on west side of, in southeast angle of crossroads, 12 feet east of corner post, in root of 12-inch maple tree; copper nail | 826. 04 |
| T. 8 S., R. 11 W., about 0.15 mile south of quarter corner on west side of sec. 5, in northeast angle of T road north, 18 feet south of corner post, on east end of 8-inch tile drain; painted square | 816. 05 |
| White Pigeon, in southeast corner of public-school yard, 2 feet north of corner post; iron post stamped "819 Mich." | 819. 220 |
| White Pigeon, 1 mile west of, in southeast angle of crossroads, 6 feet north of corner post, in base of telephone pole; rail spike | 817. 37 |
| White Pigeon, 2 miles west of, on northwest angle of crossroads, 60 feet west of corner post, 4 feet south of fence, opposite school, in root of 16-inch maple tree; rail spike | 812. 84 |
| T. 8 S., R. 12 W., sec. 3, just north of the southwest corner of, 3 miles west of White Pigeon, on the "Chicago Turnpike," in northeast angle of crossroads, 12 feet east of corner post; iron post stamped "808 Mich." | 808. 109 |
| White Pigeon, 4 miles west of, in southeast angle of crossroads, in northwest corner of farmyard, in root of 20-inch maple tree; copper nail | 791. 67 |
| Mottville, 0.5 mile east of, in southeast angle of crossroads, 40 feet east of corner post, in base of telephone pole; rail spike | 788. 48 |
| Mottville, east edge of village, in northwest angle of crossroads, in southeast corner of school yard; iron post stamped "783 Mich." | 783. 566 |
| Mottville, at covered bridge over St. Joseph River; surface of water Nov. 24, 1913 (12.9 feet below bridge floor) | 757. 3 |
| Mottville, 0.8 mile northwest of, 27 feet east of center of road forks, in root of 30-inch beech tree; copper nail | 795. 35 |
| Mottville, 1.4 miles (by road) north of, just south of center of sec. 31, T. 7 S., R. 12 W., 60 feet west by 10 feet south of center of T road north, 4 feet west of drain, in top of 8-inch elm stump; copper nail | 788. 97 |
| Mottville Reservoir; surface of water Nov. 25, 1913 | 785. 7 |
| Mottville, 2.7 miles (by road) northeast of, just north of center of sec. 32, T. 7 S., R. 12 W., in southeast angle of private T road south, 1 foot south of corner post, in base of telephone pole; spike | 794. 70 |
| T. 7 S., R. 12 W., sec. 33, 0.25 mile west of quarter corner on north side of, 3.5 miles northeast of Mottville, on south side of Mottville-Constantine road, 120 feet west of center of T road north, 10 feet east of northeast corner of J. Massing's farmyard, in top of 30-inch elm stump; copper nail | 792. 40 |

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| T. 7 S., R. 12 W., sec. 28, 0.4 mile east of center of, opposite center of T road west, 30 feet east of center of road intersection, in root of 16-inch elm tree; copper nail..... | Feet. 793.63 |
| Constantine, 0.6 mile west of, on south side of road, opposite dim private road north, 180 feet northeast of red barn, 16 feet east of north-south fence line, in base of telephone pole; rail spike..... | 788.95 |

From Mottville south to Indiana-Michigan State line.

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|---|---------|
| Mottville, east edge of village, in northwest angle of crossroads, in southeast corner of school yard; iron post stamped "783 Mich."..... | 783.566 |
| Mottville, 1.1 miles south of, 36 feet east by 90 feet north of center of T road east, in field, in root on east side of 30-inch maple tree; copper nail..... | 785.94 |
| Mottville, 2.3 miles south of, in southwest angle of crossroads, 12 feet south of corner post, in root of lone oak tree; copper nail..... | 789.09 |
| Mottville, 2.8 miles south by 0.6 mile east of, on north side of State line, 20 feet north by 14 feet west of center of T road south, in top of oak peg; copper nail..... | 794.02 |

From Indiana-Michigan State line north to Klinger station.

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| T. 8 S., R. 11 W., sec. 13, near southwest corner of, on west side of stone bridge over channel between Pickerel and Aldridge lakes; painted circle. | 819.24 |
| Pickerel and Aldridge lakes, at bridge over channel bed; surface of water Dec. 19, 1913..... | 816.2 |
| T. 8 S., R. 11 W., sec. 13, 0.25 mile west of quarter corner on north side of, in southeast angle of T road south, 50 feet east of fence corner, in root of 13-inch elm tree; copper nail..... | 854.76 |
| T. 8 S., R. 10 W., sec. 7, at southwest corner of, in northeast angle of crossroads, 0.8 mile south of Klinger station, at fence corner, 10 feet north of telephone pole, in top of osage stump; copper nail..... | 865.87 |
| Klinger station, 600 feet northeast of, in southwest angle of crossroads, 2 feet south of corner post, about 0.1 mile south of northeast corner of sec. 12, T. 8 S., R. 11 W.; iron post stamped "858 Mich."..... | 858.564 |

COLDWATER QUADRANGLE.

[Latitude 41° 45' -42°; longitude 85° -85° 15']

From point 5 miles east of Fawn River east along highways to point near Kinderhook.

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| T. 8 S., R. 8 W., sec. 9, about 0.25 mile north by 0.25 mile east of center of, in northwest angle of T road west, 120 feet north of brick schoolhouse, in root of 20-inch maple tree; copper nail..... | 915.32 |
| T. 8 S., R. 8 W., sec. 10, at center of, in southwest angle of T road south, 38 feet southwest of center of road intersection, in root of 18-inch maple tree; copper nail..... | 933.08 |
| T. 8 S., R. 8 W., quarter corner between secs. 10 and 11, in northeast angle of crossroads, 7 feet north of corner post; iron post stamped "933 Mich."..... | 932.884 |
| T. 8 S., R. 8 W., sec. 12, near southwest corner of, 16 feet northeast of center of road forks, in base of telephone pole; rail spike..... | 949.30 |
| T. 8 S., R. 7 W., sec. 7, at southwest corner of, in northeast angle of T road east, 50 feet east of corner post, in root of 36-inch oak tree; copper nail.. | 967.13 |
| T. 8 S., R. 7 W., sec. 7, at southeast corner of, in northwest angle of crossroads, 6 feet west of corner post; iron post stamped "993 Mich."..... | 993.365 |
| T. 8 S., R. 7 W., sec. 8, in southeast corner of, 200 feet west of center of crossroads, in southwest corner of yard of West Gilead School, in root of 20-inch maple tree; copper nail..... | 997.12 |

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| T. 6 S., R. 6 W., sec. 9, in southeast corner of, in northwest angle of crossroads, 12 feet south of corner post on headstone of draw; bottom of chiseled square marked "787 Mich."..... | Feet. 962.12 |
| T. 6 S., R. 6 W., sec. 15, at northeast corner of, in southwest angle of crossroads, in northeast corner of Ira Taylor's yard, in root of 18-inch hickory tree; copper nail..... | 961.88 |
| East Grand, 1 mile east of, in northeast angle of crossroads, 70 feet north of Carroll's store; iron post stamped "761 Mich."..... | 980.955 |
| East Grand, 1 mile east of, 50 feet southeast of center of crossroads, in root of 18-inch maple tree; copper nail..... | 978.92 |
| T. 6 S., R. 6 W., quarter corner between secs. 7 and 18, at center of T road south, on highest point of section stone; painted circle..... | 987.84 |
| T. 6 S., R. 6 W., sec. 17, near the northwest corner of, in southeast angle of T road south, at fence corner, in root of 15-inch maple tree; copper nail... | 1,005.86 |
| T. 6 S., R. 6 W., about 0.4 mile south of quarter corner between secs. 8 and 9, opposite center of T road south, 40 feet north of center of road intersection, in top of 6-inch hickory stump; copper nail..... | 1,024.67 |
| Kinderhook, 1 mile south of, on west shore of Silver Lake, in northwest angle of T road west, 12 feet north of corner post; iron post stamped "999 Mich."..... | 999.582 |
| Silver Lake; surface of water October 31, 1913..... | 991.9 |

KALAMAZOO QUADRANGLE.

[Latitude 42° 15'–42° 30'; longitude 85° 30'–85° 45'.]

From point near Martin south along Grand Rapids & Indiana Ry. to Kalamazoo, thence south along Lake Shore & Michigan Southern Ry. 3 miles.

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| Martin, 2.4 miles south of, 3.4 miles north of Plainwell, 330 feet west of railroad, at northeast corner of crossroads; iron post stamped "787 Mich."..... | 786.680 |
| Plainwell, 2.57 miles north of, at southwest corner of T road east at railroad crossing, corner of property with railroad right of way; vertical T rail; highest point painted "732.3"..... | 732.47 |
| Plainwell, 1.96 miles north of, on west side of south abutment of iron-girder bridge over Willow Creek; chiseled square marked "727.2"..... | 727.34 |
| Plainwell, 0.75 mile north of, 40 feet east of railroad, 30 feet south of public road, in base of telegraph pole; rail spike marked "727.1."..... | 727.28 |
| Plainwell, 185 feet south of, 100 feet northwest of crossing of Grand Rapids & Indiana and Lake Shore & Michigan Southern railroads and electric railroad; iron post stamped "738 Mich."..... | 737.914 |
| Plainwell, 0.81 mile south of, 25 feet east of railroad, 30 feet south of public road at railroad crossing, in base of telegraph pole; rail spike marked "731.8"..... | 731.92 |
| Plainwell, 1.21 miles south of, on east side of south abutment of bridge over Kalamazoo River; chiseled square marked "734.8"..... | 734.93 |
| Kalamazoo River; surface of water, 9.40 a. m., September 10..... | 724 |
| Plainwell, 2.51 miles south of, 50 feet east of railroad, 25 feet north of public road, 0.5 mile north of water tank; iron post stamped "737 Mich."..... | 737.245 |
| Cooper, 2.22 miles north of, 45 feet east of railroad, 100 feet south of public road, 0.16 mile south of water tank, in base of telephone pole; rail spike painted "739.6"..... | 739.72 |
| Cooper, 1.19 miles north of, 70 feet east of railroad, 25 feet south of private crossing, in base of telegraph pole; rail spike painted "747.3"..... | 747.46 |
| Cooper, 120 feet southeast of, 60 feet north of public road, 60 feet east of railroad, on railroad right of way; iron post stamped "764 Mich."..... | 763.727 |
| Cooper, 1 mile south of, at private railroad crossing, east end of 2-foot steel drain under railroad; highest point on small flange; painted "772.7".... | 772.91 |

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| Cooper, 2.14 miles south of, on inside of large curve, 0.2 mile north of milepost marked "R. 189, M. 271," 20 feet west of railroad, on large granite boulder; chiseled square marked "770.0"..... | Feet. 770. 18 |
| Cooper, 2.52 miles south of, 2.81 miles north of Grand Rapids & Indiana Ry. station at Kalamazoo, in west side of north abutment of concrete bridge; tablet stamped "766 Mich."..... | 766. 511 |
| Kalamazoo, 2.23 miles north of, 50 feet west of railroad, 15 feet north of second-class road, in base of telegraph pole; rail spike..... | 755. 32 |
| Kalamazoo, 0.99 mile north of, 30 feet north of milepost marked "R. 187, M. 273," on south side of east end of concrete arch culvert; chiseled square..... | 765. 31 |
| Kalamazoo, 0.21 mile north of, 25 feet northeast of Grand Rapids & Indiana and Michigan Central railroad crossing, on southwest corner of concrete signal stand, on head of bolt that fastens signal stand to concrete base; highest point painted "772.5"..... | 772. 91 |
| Kalamazoo, Michigan Central R. R. station; top of rail..... | 778. 7 |
| Kalamazoo, Grand Rapids & Indiana Ry. station; top of rail..... | 769. 9 |
| Kalamazoo, in north end of door sill at east entrance to courthouse; tablet stamped "793 Mich."..... | 793. 352 |
| Kalamazoo, 0.32 mile south of Grand Rapids & Indiana Ry. station, 30 feet south of Lake Shore & Michigan Southern Ry. crossing, opposite signal tower, on concrete base of support for signal arm; chiseled square painted "761.0"..... | 761. 38 |
| Kalamazoo, 1.41 miles south of Grand Rapids & Indiana Ry. station, 1.1 miles south of Grand Rapids & Indiana Ry. crossing on Lake Shore & Michigan Southern Ry., 40 feet west of R. Somers grocery, 25 feet east of railroad, on north side of concrete sidewalk, 1 foot from telegraph pole; chiseled square painted "775.0"..... | 775. 37 |
| Kalamazoo, 2 miles south of crossing of Grand Rapids & Indiana and Lake Shore & Michigan Southern railroads, 75 feet northeast of water tank, on southwest corner of concrete foundation to water tank; chiseled square painted "806.0"..... | 806. 38 |

READING QUADRANGLE.

[Latitude 41° 45'–42°; longitude 84° 45'–85°.]

From point near Kinderhook along highways east and south to Camden.

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| Kinderhook, 1 mile south by 1 mile east of, on north side of road, 100 feet east of north-south fence line, in root of small hickory stump; copper nail..... | 1, 017. 72 |
| T. 8 S., R. 6 W., about 0.15 mile north of quarter corner between secs. 13 and 14, 55 feet southeast of junction of T road south, at corner of rail fence; iron post stamped "1021 Mich."..... | 1, 020. 866 |
| T. 8 S., R. 5 W., sec 18, at center of, 3 miles north of Fremont, Ind., at center of crossroads, on section stone; chiseled circle..... | 1, 048. 11 |
| T. 8 S., R. 5 W., sec. 17, quarter corner on east side of, in northwest angle of crossroads, 12 feet west of corner post; iron post stamped "1061 Mich."..... | 1, 061. 583 |
| T. 8 S., R. 5 W., sec. 16, quarter corner on east side of, in northwest angle of crossroads, in root of lone 4-foot oak tree; copper nail..... | 1, 071. 21 |
| T. 8 S., R. 5 W., sec. 14, quarter corner on west side of, in northeast angle of T road north, 30 feet east of corner, in root of 12-foot elm tree; copper nail..... | 1, 089. 46 |
| T. 8 S., R. 5 W., sec. 14, quarter corner on east side of, in southwest angle of crossroads, in northeast corner of school yard; iron post stamped "1085 Mich."..... | 1, 085. 017 |

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| T. 8 S., R. 5 W., sec. 13, quarter corner on east side of, at jog in road, 30 feet west of Branch-Hillsdale county line, 3 feet east of telephone pole, in top of stump, in copper washer; spike..... | Feet 1, 073.74 |
| Montgomery, opposite public school, 80 feet northeast of center of crossroads, in root of 14-inch oak tree; copper nail..... | 1, 046.96 |
| T. 8 S., R. 4 W., sec. 17, quarter corner on east side of, in northwest angle of T road west, 5 feet west of corner post, 2.7 feet east of 6-inch white-oak tree, in limestone rock, 6 inches below surface of ground; bronze tablet stamped "1039 Mich."..... | 1, 039.087 |
| T. 8 S., R. 4 W., sec. 16, quarter corner on south side of, 8 feet north of center of turn in road, 20 feet southwest of fence corner, highest point on rock; painted circle..... | 1, 066.92 |
| Camden, at north edge of village, 150 feet south of road forks, creek crossing on main north-south street, west end of stone abutment, top course; bottom of chiseled square..... | 986.30 |

SCHOOLCRAFT QUADRANGLE.

[Latitude 42°-42° 15'; longitude 85° 30'-85° 45'.]

From point near Kalamazoo south along Lake Shore & Michigan Southern Ry. to point 1 mile south of Moore Park.

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| Portage, 3.2 miles north of, 3 feet north of public road, 25 feet west of railroad, about 300 feet southwest of a park; iron post stamped "822"..... | 822.568 |
| Portage, 2.15 miles north of, vertical T rail at south end of rack for extra rails, 60 feet south of railroad crossing, 100 feet south of post marked "Sec. 11 and 12," highest point painted "851.3"..... | 851.52 |
| Portage, 1.15 miles north of, at south end of rack for rails, at mile sign marked "W P 31, G R 64"; top of vertical T rail painted "847.0"..... | 847.19 |
| Portage, at the southeast corner of crossroads, 100 feet northeast of station, 300 feet west of post office; iron post stamped "866"..... | 866.1 |
| Portage, 1.09 miles south of, 100 feet east of public road, 450 feet south of J. S. Chubb's residence, in base of telegraph pole; rail spike painted "874.7"..... | 874.—— |
| Portage, 2.13 miles south of, 2 feet west of railroad property line, in public road, in root of hickory tree 20 inches in diameter; rail spike painted "884.9"..... | 885. |
| Portage, 3.22 miles south of, on east side of public road, opposite Frank Van Hoosen's residence, 200 feet north of railroad crossing; iron post stamped "882"..... | 882. |
| Schoolcraft, 1.95 miles north of, at railroad crossing, 25 feet west of railroad, on north side of public road, in top of 1-foot oak stump; rail spike painted "867.0"..... | 867.== |
| Schoolcraft, 0.96 mile north of, on east side of railroad, in base of telegraph pole; rail spike painted "879.5"..... | 879.== |
| Schoolcraft, 80 feet north of Lake Shore & Michigan Southern Ry. station, 2 feet east of west property line, 2 feet north of public road, on railroad right of way; iron post stamped "879"..... | 879.≡ |
| Lake Shore & Michigan Southern and Grand Trunk railroad crossing..... | 876.9≡ |
| Schoolcraft, 1 mile south of, on east side of concrete foundation to signal for railroad crossing; chiseled square marked "874.3"..... | 874.≡ |
| Schoolcraft, 1.66 miles south of, 25 feet east of railroad, 35 feet south of public road, in base of telegraph pole; rail spike painted "867.4"..... | 867.≡ |
| Schoolcraft, 2.64 miles south of, on east side of railroad, 100 feet north of public road, in base of telegraph pole; rail spike painted "858.4"..... | 858.■ |

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| Flowerfield station, 400 feet south of, on east side of public road, opposite T road west; iron post stamped "855" | Feet. 854.812 |
| Flowerfield station, 1 mile south of, near center of sec. 7, T. 5 S., R. 11 W., in base of railroad-crossing sign, 20 feet west of railroad, 12 feet north of public road; rail spike painted "848.0" | 848.23 |
| Flowerfield station, 1.5 miles south of, 0.4 mile west of northeast corner of sec. 18, T. 5 S., R. 11 W., 25 feet east of railroad, 40 feet south of public road, in base of telegraph pole; rail spike painted "851.8" | 851.98 |
| Moore Park, 0.92 mile north of, 0.4 mile west of northeast corner of sec. 19, T. 5 S., R. 11 W., 100 feet south of public road, 25 feet east of railroad, in base of telegraph pole; rail spike painted "845.2" | 845.43 |
| Moore Park station, 500 feet south of Lake Shore & Michigan Southern Ry. station, about 300 feet west of southeast corner of SW. $\frac{1}{4}$ sec. 19, T. 5 S., R. 11 W., on north side of public road, 2 feet west of railroad right of way; iron post stamped "833" | 832.758 |
| Moore Park, 1 mile south of, about 0.4 mile west of southeast corner of sec. 30, T. 5 S., R. 11 W., 40 feet south of public road, 25 feet west of railroad, in base of telegraph pole; rail spike painted "829.7" | 829.91 |

STURGIS QUADRANGLE.

[Latitude 41° 45'-42"; longitude 85° 15'-85° 30'.]

From point near Klinger east along Lake Shore & Michigan Southern Ry. to Sturgis, thence south and east along highways to point 5 miles east of Fawn River.

| | |
|---|---------|
| Klinger station, 2.1 miles east of, in southwest angle of Lake Shore & Michigan Southern Ry. and highway crossing, in base of crossing post; rail spike | 883.18 |
| Klinger station, 3.13 miles east of, in southeast angle of Lake Shore & Michigan Southern Ry. and highway crossing, 52 feet south of center of track, 2 feet west of fence; iron post stamped "893 Mich." | 893.080 |
| Klinger station, 4.15 miles east of, in southwest angle of Lake Shore & Michigan Southern Ry. and highway crossing, 35 feet south of center of track, in root of 20-inch maple stump; rail spike | 905.19 |
| Sturgis, 0.35 mile west of, in southeast angle of Lake Shore & Michigan Southern Ry. and highway crossing, 15 feet southeast of crossing board, in base of telephone pole; rail spike | 913.05 |
| Sturgis, 450 feet west of Lake Shore & Michigan Southern Ry. station, 11 feet north of lone maple tree in station park; iron post stamped "921 Mich." | 920.828 |
| Sturgis, in front of station; top of rail | 922.3 |
| Sturgis, at east corporate limits, in northwest corner of East Chicago St. and Lake View Ave., in root of 18-inch maple tree; spike | 930.27 |
| Sturgis, 1.3 miles south by 0.5 mile east of, T. 8 S., Rs. 9 and 10 W., corner of secs. 7 and 18, and 12 and 13, respectively, on highest point on section stone; painted square | 898.44 |
| T. 8 S., R. 9 W., sec. 18, at northeast corner of, in southwest angle, 90 feet west of center of cross roads, 65 feet northwest of Narbor schoolhouse, in root of 16-inch maple tree; rail spike | 905.40 |
| T. 8 S., R. 9 W., sec. 16, at quarter corner on north side of, in southeast angle of T road south, 8 feet west of corner post, highest point on large granite boulder; painted square | 907.52 |
| Fawn River, at west edge of village, on north side of east-west street, at Fawn River Union Church, east end of concrete steps, on first step; bottom of chiseled square | 890.10 |

| | |
|--|------------------|
| T. 8 S., R. 9 W., sec. 10, at center of, 0.6 mile northeast of Fawn River, at center of road forks, 250 feet south of red brick barn, in center of triangular grass plot; iron post stamped "905 Mich" | Feet. 905.609 |
| T. 8 S., R. 9 W., sec. 11, at center of, opposite T road north, 36 feet south of center of road intersection, in root on north side of buckeye tree; copper nail | 911.06 |
| T. 8 S., R. 9 W., sec. 12, at center of opposite T road west, 48 feet east of center of road intersection. in root on west side of 26-inch oak tree; rail spike | 923.10 |
| T. 8 S., Rs. 8 and 9 W., corner of secs. 7 and 18 and 12 and 13, respectively, St. Joseph-Branch county line, center of T road north, in root of 24-inch oak tree; copper nail | 922.65 |
| T. 8 S., R. 8 W., sec. 18, at northeast corner of, in southwest angle of T road south, 15 feet south of corner post; iron post stamped "917 Mich" | 917.689 |
| T. 8 S., R. 8 W., sec. 8, 0.25 mile north of center of, opposite T road east, in southeast corner of H. N. Good's farmyard, in base of telephone pole; rail spike | 914.33 |

WAYLAND QUADRANGLE.

[Latitude 42° 30'–42° 45'; longitude 85° 30'–85° 45'.]

From point near Moline south along Grand Rapids & Indiana Ry. to point 1.8 miles south of Martin.

| | |
|---|---------|
| Moline, 0.9 mile north of, at first railroad crossing, 40 feet east of railroad, 27 feet north of public road. in base of telegraph pole; rail spike painted "778.3" | 778.39 |
| Moline, in northwest corner of public school yard; iron post stamped "805 Mich" | 805.474 |
| Moline, in front of station; top of rail | 806.8 |
| Moline, 0.71 mile south of, at first railroad crossing, 20 feet west of railroad, 20 feet east of public road, 30 feet south of crossing, in base of telephone pole; rail spike painted "786.0" | 786.12 |
| Moline, 1.5 miles south of, 3.3 miles north of Wayland, on east side of railroad, about 1,000 feet northeast of large barn, in base of telegraph pole; rail spike | 766.54 |
| Moline, 2.24 miles south of, 2.56 miles north of Wayland, 45 feet west of railroad, 20 feet north of public road, about 0.5 mile north of milepost marked "M. 245"; iron post stamped "756 Mich" | 756.582 |
| Wayland, 1.51 miles north of, on Grand Rapids & Indiana Ry., 10 feet west of electric railroad, on north side of public road, in center of west end of concrete culvert under electric railroad; chiseled square marked "739.6" | 739.75 |
| Wayland, 1 mile north of, 20 feet north of milepost marked "R. 214 M. 246," first drift bolthead at southeast corner of trestle; highest point marked "743.0" | 743.65 |
| Wayland, about 200 feet southwest of station, on north side of public road, 5 feet west of railroad right of way; iron post stamped "746 Mich" | 746.074 |
| Wayland, 0.77 mile south of, 30 feet east of public road, in base of telephone pole; rail spike marked "740.3" | 740.43 |
| Wayland, 1.52 miles south of, 40 feet west of railroad, 20 feet north of public road at railroad crossing, in base of telephone pole; rail spike marked "744.1" | 744.23 |
| Bradley, 0.5 mile north of, at first railroad crossing, 40 feet east of railroad, 20 feet south of public road, in base of telephone pole; rail spike marked "762.5" | 762.62 |

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| Bradley, 100 feet south of, on south side of public road, 45 feet east of railroad; iron post stamped "784 Mich"..... | Feet. 784.406 |
| Bradley, 0.74 mile south of, at first railroad crossing, in root of elm tree, 60 feet east of railroad on right of way, 25 feet north of public road; copper nail marked "805.7"..... | 805.84 |
| Bradley, south of, on Grand Rapids & Indiana Ry., at electric overhead crossing; top of rail..... | 844.8 |
| Bradley, 1.64 miles south of, 1.2 miles north of Shelbyville, on top of southwest concrete pier at overhead road crossing; chiseled square..... | 851.12 |
| Shelbyville, 0.79 mile north of, at first railroad crossing, 50 feet east of railroad, 20 feet north of public road, in root of maple tree; rail spike marked "839.1"..... | 839.24 |
| Shelbyville, 150 feet east of station, on south side of public road, 100 feet east of railroad, 13 feet north of concrete sidewalk, 150 feet west of post office; iron post stamped "831 Mich"..... | 831.265 |
| Shelbyville, 0.92 mile south of, at first railroad crossing, 60 feet west of railroad, 17 feet north of public road, in base of telephone pole; rail spike marked "807.2"..... | 807.32 |
| Shelbyville, 1.94 miles south of, at second railroad crossing, on east side of railroad, at corner of railroad property line and south line of public road, on T rail used as corner post; highest point marked "822.2"..... | 822.30 |
| Martin, 0.82 mile north of, 50 feet west of railroad, on south side of public road, in base of telephone pole; rail spike marked "822.1"..... | 822.24 |
| Martin, 150 feet east of, 7 feet south of property line of public road, on railroad right of way; iron post stamped "832 Mich"..... | 832.499 |
| Monteith station, 0.16 mile north of, 30 feet east of railroad, on north road line and east property line of railroad, on vertical T rail; highest point marked "822.3"..... | 822.50 |
| Grand Rapids & Indiana and Michigan Central railroad crossing..... | 822.0 |
| Martin, 1.83 miles south of, 50 feet west of railroad, 15 feet south of public road, on large granite boulder; chiseled square marked "813.1"..... | 813.22 |

Chesaning, Corunna, Fowlerville, Saginaw, and St. Charles quadrangles.

LIVINGSTON, SAGINAW, AND SHIAWASSEE COUNTIES

The elevations in the following list were determined by primary leveling and accord with Bulletin 461 and with elevations determined by the Corps of Engineers, U. S. Army, at Saginaw.

The leveling was done in 1913 by E. C. Bibbee.

CHESANING QUADRANGLE.

[Latitude 43°-43° 15'; longitude 84°-84° 15'.]

From sec. 23, T. 7 N., R. 3 E. north along highways to sec. 23, T. 10 N., R. 4 E

| | |
|---|------------------|
| T. 7 N., R. 3 E., 40 feet north by 30 feet east of southwest corner of sec. 12, 5 miles east by 1 mile north of Owosso; iron post stamped "750"..... | Feet. 749.789 |
| NOTE.—Moved 4 feet east of this position and elevation not changed. | |
| T. 7 N., R. 3 E., near southeast corner of sec. 2, 100 feet northwest of crossroads, on southeast corner of first step at entrance to district school No. 5; chiseled square..... | 763.91 |
| T. 8 N., R. 3 E., near southeast corner of sec. 35, 10 feet east of northwest corner of crossroads, on large granite boulder; highest point..... | 754.83 |
| T. 8 N., R. 3 E., 125 feet northeast of southwest corner of sec. 25, on southwest corner of porch at entrance to Hart schoolhouse; chiseled square... | 749.06 |

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| T. 8 N., R. 3 E., 0.25 mile west of southeast corner of sec. 26, at northeast corner of T road north; iron post stamped "747" | Feet. 746. 517 |
| T. 8 N., R. 3 E., 400 feet west of southeast corner of sec. 23, on south side of east abutment of bridge over creek; chiseled square..... | 736. 32 |
| T. 8 N., R. 3 E., 30 feet north of southeast corner of sec. 14, on top of west end of stone-arch culvert; chiseled square..... | 734. 39 |
| T. 8 N., R. 3 E., near southwest corner of sec. 12, at northeast corner of crossroads; iron post stamped "730" | 729. 945 |
| T. 8 N., R. 3 E., 480 feet south of northeast corner of sec. 11, on center of west end of stone-arch culvert; chiseled square..... | 726. 74 |
| T. 9 N., R. 3 E., rock marking southwest corner of sec. 36, on Shiawassee-Saginaw county line, in center of road north; highest point | 703. 36 |
| T. 9 N., R. 3 E., near northeast corner of sec. 35, at southwest corner of crossroads; iron post stamped "689" | 688. 744 |
| T. 9 N., R. 3 E., near northwest corner of sec. 25, on south side of west abutment of bridge over ditch, 12 feet southeast of center of crossroads; chiseled square..... | 672. 35 |
| T. 9 N., R. 3 E., near northwest corner of sec. 24, 20 feet southwest of center of crossroads, on south side of west abutment of bridge over ditch; chiseled square..... | 659. 39 |
| T. 9 N., R. 3 E., near northeast corner of sec. 14, at southwest corner of crossroads, opposite district school No. 9, 2.5 miles due east of Chesaning; iron post stamped "634" | 633. 464 |
| T. 9 N., R. 3 E., near southwest corner of sec. 1, 10 feet northeast of corner of crossroads, on granite boulder; chiseled square..... | 619. 21 |
| T. 9 N., R. 4 E., 100 feet east of southwest corner of sec. 6, 20 feet north of center of road; in root of 2-foot white-oak tree; copper nail..... | 621. 15 |
| T. 9 N., R. 4 E., near southwest corner of sec. 5, at northeast corner of crossroads, opposite district school No. 5; iron post stamped "620" | 620. 229 |
| T. 9 N., R. 4 E., 300 feet west of northeast corner of sec. 6, opposite T road north, on south side of road, 15 feet north of south fence line, in root of white-oak tree; copper nail | 611. 74 |
| T. 10 N., R. 4 E., 30 feet southwest of northeast corner of sec. 31, at southwest corner of crossroads, on west end of top of flange of 4-foot steel drain; highest point..... | 600. 50 |
| T. 10 N., R. 4 E., near northwest corner of sec. 29, at southwest corner of crossroads, south end of flange on 4-foot steel drain; highest point..... | 595. 58 |

CORUNNA QUADRANGLE.

[Latitude 42° 45'–43°; longitude 84°–84° 15'.]

From sec. 18, T. 4 N., R. 4 E., along highways north to sec. 23, T. 7 N., R. 3 E.

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|---|----------|
| T. 4 N., R. 4 E., near quarter corner on west side of sec. 7, on east side of south abutment of iron bridge over Conway and Cohocta ditch; chiseled square..... | 876. 44 |
| T. 4 N., R. 4 E., 20 feet east of quarter corner on west side of sec. 6, 150 feet north of E. H. Young's house, opposite T road west, in root of oak tree; copper nail..... | 886. 26 |
| T. 4 N., R. 3 E., 12 feet southwest of northwest corner of sec. 1, on Livingston-Shiawassee county line, in top of 2-foot white-oak stump; copper nail..... | 877. 73 |
| T. 5 N., R. 3 E., 50 feet north of southwest corner of sec. 35, on west side of road at T road north, 50 feet north of Livingston-Shiawassee county line; iron post stamped "895" | 894. 629 |

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|---|----------|
| T. 5 N., R. 3 E., near southwest corner of sec. 26, at northeast corner of small bridge, on rock; chiseled square..... | 861. 16 |
| T. 5 N., R. 3 E., near quarter corner on south side of sec. 26; opposite T road north, in root of 5-foot elm tree; copper nail..... | 881. 12 |
| T. 5 N., R. 3 E., at quarter corner on north side of sec. 26, on concrete base to corner fence post; chiseled square..... | 884. 18 |
| T. 5 N., R. 3 E., near quarter corner on south side of sec. 14, on east side of road, 200 feet north of W. L. Scribner's residence; iron post stamped "876"..... | 875. 654 |
| T. 5 N., R. 3 E., 260 feet east of quarter corner on north side of sec. 14, in root of 2-foot black-oak tree; copper nail..... | 867. 28 |
| T. 5 N., R. 3 E., at northwest corner of sec. 12, on concrete base of corner fence post; chiseled square..... | 856. 40 |
| T. 5 N., R. 3 E., near quarter corner on west side of sec. 1, 1 mile south of Bancroft, on west side of north abutment of iron bridge over ditch; chiseled square..... | 844. 61 |
| Bancroft, 400 feet east of schoolhouse, at northeast corner of crossroads, near center of sec. 36, T. 6 N., R. 3 E.; iron post stamped "844"..... | 844. 432 |
| T. 6 N., R. 3 E., 0.25 mile west of quarter corner on east side of sec. 26, at southwest corner of crossroads, in center of east end of water trough; chiseled square..... | 839. 42 |
| T. 6 N., R. 3 E., 0.25 mile west by 0.1 mile south of northeast corner of sec. 23, 300 feet north of N. P. Harder's residence, on fence line on west side of road, opposite T road east, on large bowlder; chiseled square..... | 837. 45 |
| T. 6 N., R. 3 E., near center of sec. 14, 25 feet south of public road, in root of 2-foot white-oak tree; copper nail..... | 833. 60 |
| T. 6 N., R. 3 E., in center of sec. 11, at southwest corner of crossroads; iron post stamped "818"..... | 818. 378 |
| T. 6 N., R. 3 E., in SE. $\frac{1}{4}$ sec. 2, 460 feet north of Shiawassee River, on east side of south abutment of iron bridge; chiseled square..... | 771. 56 |
| T. 6 N., R. 3 E., 0.25 mile west of center of sec. 2, in center of concrete header at south end of 2-foot steel drain under road; chiseled square..... | 779. 30 |
| T. 7 N., R. 3 E., 25 feet northeast of southeast corner of sec. 35, in root of 2 $\frac{1}{2}$ -foot tree, in center of road; copper nail..... | 795. 69 |
| Larned, at crossing of Grand Trunk Ry.; top of rail..... | 787. 7 |
| Larned, at crossing of Ann Arbor R. R. and S. S. Lines; top of rail..... | 786. 5 |
| T. 7 N., R. 3 E., near southwest corner of sec. 25, 2.5 miles southeast of Corunna, at northeast corner of crossroads; iron post stamped "756"..... | 756. 256 |
| T. 7 N., R. 3 E., 0.5 mile north of southeast corner of sec. 26, 20 feet south of southeast corner of bridge over Shiawassee River, on retaining wall; chiseled square..... | 748. 86 |
| Shiawassee River; surface of water July 28, 1913..... | 737 |
| T. 7 N., R. 3 E., 0.25 mile south of northeast corner of sec. 23, 300 feet south of Kincade's elevator, at northwest corner of crossroads, on large sandstone rock; chiseled square..... | 762. 31 |
| T. 7 N., R. 3 E., near northeast corner of sec. 23, in northeast corner of porch at entrance to schoolhouse; nail head painted white..... | 767. 00 |

FOWLERVILLE QUADRANGLE.

[Latitude 42° 30'–42° 45'; longitude 84°–84° 15'.]

From sec. 14, T. 4 N., R. 3 E., east along highway to sec. 14, T. 4 N., R. 4 E.

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|--|------------------|
| T. 4 N., R. 3 E., center of line between secs. 13 and 14, directly in front of J. B. Fuller's house, in small grass plot at junction with T road; iron post stamped "Prim. Trav. Sta. No. 1, 907"..... | Feet. 906.815 |
| T. 4 N., R. 4 E., 30 feet north of quarter corner on west side of sec. 18, on large rock; chiseled square..... | 909.95 |

SAGINAW QUADRANGLE.

[Latitude 43° 15'–43° 30'; longitude 83° 45'–84'.]

From sec. 20, T. 10 N., R. 4 E., north to Saginaw.

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| T. 10 N., R. 4 E., near quarter corner on east side of sec. 21, 25 feet southwest of center of crossroads, at southwest corner of bridge over ditch, on top of T rail for abutment; highest point..... | 593.64 |
| T. 10 N., R. 4 E., near quarter corner on east side of sec. 22, 30 feet west by 30 feet south of center of T road west; iron post stamped "600"..... | 599.450 |
| T. 10 N., R. 4 E., near southwest corner of sec. 14, in center of west end of concrete box culvert, 20 feet east of northwest corner of crossroads; chiseled square..... | 598.03 |
| T. 10 N., R. 4 E., 1,000 feet north of southeast corner of sec. 11, on west side of road, in root of water-maple tree; copper nail..... | 601.50 |
| T. 10 N., R. 4 E., near southeast corner of sec. 2, at northwest corner of crossroads; iron post stamped "595"..... | 594.785 |
| T. 10 N., R. 4 E., 2,000 feet south of northeast corner of sec. 2, on west side of north abutment of iron bridge over ditch; chiseled square..... | 595.19 |
| T. 11 N., R. 4 E., near center of sec. 35, in southwest corner of crossroads, in root of 14-inch maple tree; copper nail..... | 596.47 |
| Flint River; surface of water August 4, 1913..... | 586.6 |
| T. 11 N., R. 4 E., 30 feet west by 35 feet south of northeast corner of sec. 28, at southwest corner of crossroads; iron post stamped "596"..... | 595.809 |
| T. 11 N., R. 4 E., 20 feet west by 20 feet south of northeast corner of sec. 23, on west end of steel drain under pike; highest point..... | 591.31 |
| Cass River; surface of water August 5, 1913..... | 501.1 |
| T. 11 N., R. 4 E., at northeast corner of bridge over Cass River, in top of 12 by 20-inch stringer on top of piling; copper nail..... | 588.50 |
| T. 11 N., R. 4 E., 0.7 mile south of South Saginaw (in Forest Lawn Cemetery), on west side of north abutment of bridge over ditch; chiseled square..... | 585.98 |
| T. 12 N., R. 4 E., 0.25 mile north of southwest corner of sec. 36, in forks of East Street and Washington Avenue in South Saginaw; iron post stamped "600"..... | 599.314 |
| South Saginaw, Washington Avenue and Hess Street; intersection..... | 593.3 |
| South Saginaw, on east side of sec. 35, T. 12 N., R. 4 E., at corner of Center Street and Washington Avenue, in front of Moeller's drug store, on curb, 3 feet east of fire plug and 3 feet west of pump; chiseled square..... | 598.60 |
| South Saginaw, intersection of Washington Avenue and Webber Street... | 594.7 |
| Saginaw, southwest corner of Washington Avenue and Bristol Street, 1 foot east of hitching post, 200 feet southwest to City Hall, on curb; chiseled square..... | 601.39 |
| Saginaw, in cement walk at head of stairs on south side of east approach of the Genesee Street bridge; circular copper plate (U. S. C. E. B. M.)..... | 598.889 |

From Saginaw along streets to West Saginaw.

| | |
|--|-----------------|
| West Saginaw, at northwest corner of Salt and Center streets, on top of catch basin at east end of curb; paint spot..... | Feet. 599.90 |
| West Saginaw, northwest corner of Michigan Avenue and Wheeler Street, near A. T. Farrell Manufacturing Co.'s plant, on top of catch basin; paint spot..... | 599.34 |

ST. CHARLES QUADRANGLE.

[Latitude 43° 15'–43° 30'; longitude 84°–84° 15'.]

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|---|---------|
| From sec. 29, T. 10 N., R. 4 E., northeast along highway to sec. 20, T. 10 N., R. 4 E. | |
| T. 10 N., R. 4 E., near center of sec. 19, at southwest corner of McDonald's Corners, 1 mile south of Alicia post office; iron post stamped "595"..... | 594.644 |
| T. 10 N., R. 4 E., 0.25 mile west of center of sec. 20, 60 feet north of public road, in root of 20-inch white-oak tree; copper nail..... | 597.32 |
| From West Saginaw north along highway to southeast corner of sec. 32, T. 13 N., R. 4 E., thence west 5.5 miles, thence south to point near Swan Creek post office, thence east to West Saginaw. | |
| T. 12 N., R. 4 E., 0.25 mile west of center of sec. 33, 12 feet northeast of southwest corner of T road south, at Vogt Corners, in root of 3-foot elm tree; copper nail..... | 595.78 |
| T. 12 N., R. 4 E., near quarter corner on east side of sec. 29, at northwest corner of crossroads, southeast corner of Otto school yard; iron post stamped "604"..... | 604.030 |
| T. 12 N., R. 4 E., near quarter corner on west side of sec. 21, at southeast corner of crossroads, in root of poplar tree; copper nail..... | 620.58 |
| T. 12 N., R. 4 E., 25 feet north by 30 feet east of southwest corner of sec. 16, in root of pine stump; copper nail..... | 627.08 |
| T. 12 N., R. 4 E., near southeast corner of sec. 8, at west abutment of concrete box culvert, on west side of north end of wing wall; chiseled square..... | 626.28 |
| T. 12 N., R. 4 E., 20 feet west by 20 feet south of northeast corner of sec. 8, on west end of concrete box culvert; chiseled square..... | 627.32 |
| T. 13 N., R. 4 E., 25 feet north by 25 feet west of southeast corner of sec. 32; iron post stamped "627"..... | 626.262 |
| T. 13 N., R. 4 E., 165 feet west of southeast corner of sec. 31, in northeast corner of foundation for scales, 70 feet west of Lawndale station, head of drift-bolt; highest point..... | 636.71 |
| T. 13 N., R. 4 E., 30 feet north by 30 feet east of southwest corner of sec. 31, in base of sugar-maple tree; 40-penny spike..... | 627.64 |
| T. 12 N., R. 3 E., 30 feet west by 30 feet south of northeast corner of sec. 2, at southwest corner of crossroads; iron post stamped "627"..... | 627.218 |
| T. 13 N., R. 3 E., 25 feet north by 25 feet east of southwest corner of sec. 35, about 200 feet east of Tittabawassee River, in root of maple tree; copper nail..... | 614.89 |
| T. 12 N., R. 3 E., 100 feet west by 20 feet south of northwest corner of sec. 3, in top of 3-foot elm stump; copper nail..... | 621.46 |
| T. 13 N., R. 3 E., 0.5 mile east of southwest corner of sec. 33, in yard opposite T road south, in root of poplar tree; copper nail..... | 620.84 |
| T. 12 N., R. 3 E., 60 feet west by 20 feet north of quarter corner on south side of sec. 4, at northeast corner of bridge, on T rail used to support wing wall; highest point..... | 603.33 |
| T. 12 N., R. 3 E., 0.25 mile north of Frost, northwest wing wall to iron bridge over Swan Creek; chiseled square..... | 598.02 |
| T. 12 N., R. 3 E., 80 feet north of quarter corner on south side of sec. 9, at Frost, on southeast corner of scales opposite general store; top of bolt-head..... | 607.07 |

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|---|------------------|
| T. 12 N., R. 3 E., 300 feet south of quarter corner on south side of sec. 16, at northwest corner of bridge over McClellan Run; sixth rivet head from bottom of truss, highest point..... | Feet. 599. 70 |
| T. 12 N., R. 3 E., at center of sec. 21; iron post stamped "599"..... | 598. 627 |
| T. 12 N., R. 3 E., 20 feet south by 30 feet west of center of sec. 28, on State pike, in root of pine stump; bolthead..... | 608. 08 |
| T. 12 N., R. 3 E., near center of sec. 33, 20 feet south of Pere Marquette R. R., in base of telephone pole; rail spike..... | 608. 31 |
| T. 11 N., R. 3 E., 25 feet north by 20 feet west of southeast corner of sec. 4; iron post stamped "Prim. Trav. Sta. No. 16, 594"..... | 593. 317 |
| T. 11 N., R. 3 E., 500 feet west of northeast corner of sec. 10, on south side of road, on Michigan Central R. R. right of way, opposite Swan Creek post office; iron post stamped "595"..... | 594. 350 |
| T. 11 N., R. 3 E., 25 feet east by 20 feet south of northwest corner of sec. 12, in base of telephone pole; rail spike..... | 594. 18 |
| T. 11 N., R. 3 E., 50 feet north by 50 feet west of southeast corner of sec. 1, in cultivated field, in root of ash tree; copper nail..... | 594. 75 |
| T. 11 N., R. 4 E., 15 feet west by 12 feet south of northeast corner of sec. 7, on southeast corner of concrete box culvert; chiseled square..... | 592. 82 |
| T. 11 N., R. 4 E., 25 feet west by 20 feet south of quarter corner on north side of sec. 8, 50 feet west of railroad switch to mine; iron post stamped "592"..... | 591. 783 |
| T. 11 N., R. 4 E., 0.25 mile south of northeast corner of sec. 5, 25 feet west by 20 feet south of center of T road south, in base of telephone pole; rail spike..... | 592. 12 |
| From sec. 33, T. 13 N., R. 3 E., along highway west 5.5 miles, thence south and east to Swan Creek post office. | |
| T. 13 N., R. 3 E., 25 feet north by 25 feet west of southeast corner of sec. 32, at northwest corner of crossroads; iron post stamped "617"..... | 616. 823 |
| T. 12 N., R. 3 E., near northeast corner of sec. 6, on south end of doorsill at entrance to district No. 2 schoolhouse; chiseled square..... | 622. 14 |
| T. 13 N., R. 2 E., 25 feet north by 30 feet west of southeast corner of sec. 36, at northwest corner of crossroads; iron post stamped "625"..... | 624. 367 |
| T. 13 N., R. 2 E., 200 feet east of southwest corner of sec. 36, on north side of west abutment of iron bridge over south branch of Swan Creek; chiseled square..... | 619. 20 |
| T. 13 N., R. 2 E., near southwest corner of sec. 35, at northeast corner of crossroads, in corner fence post, 5 feet above ground; rail spike..... | 630. 50 |
| T. 12 N., R. 2 E., 40 feet south by 30 feet east of northwest corner of sec. 3, on east side of road, opposite the John C. Nafe district No. 7 schoolhouse; iron post stamped "637"..... | 637. 019 |
| T. 12 N., R. 2 E., 25 feet west by 30 feet north of southeast corner of sec. 4, in root of elm tree; rail spike..... | 638. 30 |
| T. 12 N., R. 2 E., 200 feet north by 16 feet west of southeast corner of sec. 9, on wing wall at southwest corner of iron bridge over creek; chiseled square..... | 636. 37 |
| T. 12 N., R. 2 E., 140 feet south by 30 feet east of quarter corner west side of sec. 15, in southwest corner of Lunney school yard; iron post stamped "643"..... | 643. 118 |
| T. 12 N., R. 2 E., 20 feet north by 20 feet west of quarter corner east side of sec. 21, at northwest corner of crossroads, on west end of tile drain; highest point..... | 643. 93 |

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| T. 12 N., R. 2 E., 20 feet north by 20 feet west of quarter corner on east side of sec. 28, 400 feet east of Hemlock post office, in base of telephone pole; rail spike..... | Feet. 649. 25 |
| T. 12 N., R. 2 E., 320 feet south of northeast corner of sec. 33, on west side of north abutment of concrete bridge; chiseled square..... | 646. 02 |
| T. 11 N., R. 2 E., 20 feet west by 35 feet south of northeast corner of sec. 4; iron post stamped "641"..... | 640. 481 |
| T. 11 N., R. 2 E., 150 feet southwest of northeast corner of sec. 9, on northwest corner of porch at entrance to Cleveland schoolhouse; chiseled square..... | 640. 19 |
| T. 11 N., R. 2 E., 25 feet north by 12 feet east of southwest corner of sec. 2, in root of pine stump; rail spike..... | 629. 26 |
| T. 11 N., R. 2 E., 700 feet east of southwest corner of sec. 1, 4 feet northeast of northeast corner of small bridge; on T rail support to wing wall; highest point..... | 621. 46 |
| T. 11 N., R. 2 E., 25 feet south by 25 feet west of northeast corner of sec. 12, at southwest corner of crossroads; iron post stamped "609"..... | 608. 682 |
| T. 11 N., R. 3 E., 20 feet west by 30 feet south of northeast corner of sec. 7, in root of pine stump; copper nail..... | 606. 20 |
| T. 11 N., R. 3 E., 100 feet east by 20 feet north of southwest corner of sec. 4, in root of pine stump; 20-penny spike..... | 606. 23 |
| From Swan Creek south along Michigan Central R. R. to Fergus, thence east to point near Alicia. | |
| T. 11 N., R. 3 E., 0.25 mile north of southeast corner of sec. 9, 50 feet north of railroad, 25 feet west of public road, in corner fence post on railroad right of way; rail spike..... | 589. 36 |
| T. 11 N., R. 3 E., NW. $\frac{1}{4}$ sec. 16, on west side of public road, 60 feet south of railroad; in root of maple tree; rail spike..... | 596. 71 |
| T. 11 N., R. 3 E., 30 feet west by 55 feet north of southeast corner of sec. 17, 40 feet south of Garfield station, 1 foot east of railroad right of way; iron post stamped "600"..... | 599. 580 |
| T. 11 N., R. 3 E., 0.4 mile west of southeast corner of sec. 20, 10 feet west of railroad right of way, in brace of telephone pole; rail spike..... | 599. 74 |
| T. 11 N., R. 3 E., 0.1 mile east of center of sec. 29, 40 feet east of railroad, 100 feet south of public road, in base of telephone pole; rail spike..... | 600. 24 |
| T. 11 N., R. 3 E., near center of sec. 32, 40 feet east of railroad, on north side of public road, in base of telephone pole; rail spike..... | 601. 28 |
| T. 10 N., R. 3 E., N. $\frac{1}{4}$ sec. 5, 300 feet north of St. Charles Electric Light and Power Co.'s house, on east side of north abutment of bridge over Bad River; chiseled square..... | 594. 74 |
| T. 10 N., R. 3 E., sec. 5, in northeast corner of St. Charles school yard; iron post stamped "596"..... | 595. 837 |
| T. 10 N., R. 3 E., SE. $\frac{1}{4}$ sec. 8, 1 mile south of St. Charles, in cultivated field, 50 feet south of public road, 70 feet west of railroad at crossing, in root of oak tree; rail spike..... | 596. 49 |
| T. 10 N., R. 3 E., E. $\frac{1}{4}$ sec. 16, 400 feet north of milepost marked "B C 31 J 84," on west side of railroad, in west side of switch stand at switch leading to No. 3 mine; highest point of rail spike..... | 606. 36 |
| T. 10 N., R. 3 E., near quarter corner on east side of sec. 20, opposite Fergus post office, on north side of public road, 50 feet east of railroad; iron post stamped "602"..... | 601. 706 |
| T. 10 N., R. 3 E., 1,200 feet east of quarter corner on west side of sec. 22, on north side of west abutment of iron bridge over Shiawassee River; chiseled square..... | 603. 63 |

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| T. 10 N., R. 3 E., 15 feet north by 15 feet west of quarter corner on east side of sec. 22, on west end of concrete arch culvert; chiseled square..... | Feet 594.44 |
| T. 10 N., R. 3 E., 50 feet south by 10 feet east of quarter corner on west side of sec. 24, on northeast corner of small bridge; top of bolt-head..... | 594.75 |
| T. 10 N., R. 4 E., near quarter corner on west side of sec. 19, in base of telephone pole, about 6 inches above ground; 60-penny spike..... | 596.19 |

From sec. 9, T. 11 N., R. 2 E., south and east along highways to Fergus.

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| T. 11 N., R. 2 E., 20 feet west by 50 feet south of northeast corner of sec. 16, in root of elm tree, 2 feet east of trunk; copper nail..... | 631.83 |
| T. 11 N., R. 2 E., 27 feet west by 30 feet south of center of sec. 16, at southwest corner of T road west; iron post stamped "629"..... | 628.244 |
| T. 11 N., R. 2 E., 15 feet west by 20 feet south of northeast corner of sec. 21, on west end of concrete arch culvert; chiseled square..... | 627.56 |
| T. 11 N., R. 2 E., 30 feet north by 30 feet east of southwest corner of sec. 22, at south entrance to E. S. Winchel's store, on west end of second step from bottom; chiseled square..... | 628.72 |
| T. 11 N., R. 2 E., 50 feet north by 10 feet west of southeast corner of sec. 28, on center of west end of concrete arch culvert; chiseled square..... | 621.83 |
| T. 11 N., R. 2 E., 25 feet south of southwest corner of sec. 34, opposite T road north; iron post stamped "617"..... | 617.114 |
| T. 10 N., R. 2 E., 70 feet west by 70 feet south of northeast corner of sec. 9, on top of east side of well curb, in Frank Ewing's yard; paint spot..... | 618.79 |
| T. 10 N., R. 2 E., 15 feet north by 15 feet west of southeast corner of sec. 9, on north end of concrete culvert; chiseled square..... | 615.32 |
| T. 10 N., R. 2 E., 0.2 mile north of southwest corner of sec. 15, in southwest corner of Brant school yard; iron post stamped "612"..... | 612.101 |
| T. 10 N., R. 2 E., 200 feet west of northeast corner of sec. 22, 1 foot east of southeast corner of bridge over Old Canal, on steel wing wall; paint spot..... | 602.09 |
| T. 10 N., R. 2 E., 100 feet northwest of southeast corner of sec. 14, at entrance to Ring schoolhouse, on southeast corner of concrete porch; chiseled square..... | 606.79 |
| T. 10 N., R. 2 E., in center of T road south, at northeast corner of SE. $\frac{1}{4}$ sec. 14; on rock marking corner; highest point..... | 609.68 |
| T. 10 N., R. 3 E., 30 feet south by 25 feet east of quarter corner on west side of sec. 18; iron post stamped "605"..... | 604.836 |
| T. 10 N., R. 3 E., in east part of sec. 18, 50 feet south of T road, on east side of road, in root of 15-inch oak tree; copper nail..... | 600.67 |
| T. 10 N., R. 3 E., 0.3 mile west of northeast corner of sec. 19, at northeast corner of small bridge, on granite rock in wing wall; chiseled point on highest part..... | 600.07 |
| T. 10 N., R. 3 E., 20 feet south by 20 feet west of quarter corner on north side of sec. 20, on west end of concrete arch culvert; chiseled square.... | 601.06 |

Houghton quadrangle.

HOUGHTON COUNTY.

The elevations in the following list were determined by *primary* levels and accord with elevations for Houghton given in Bulletin 46

The leveling was done in 1911 by Howard Clark.

HOUGHTON QUADRANGLE.

[Latitude 47°-47° 15'; longitude 88° 30'-88° 45'.]

From Houghton south along highways to Chassell, thence west to Painesdale.

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| Houghton, in lawn in front of main building of School of Mines, 18 feet east of walk leading directly east from main building, 54 feet from walk from building; iron post stamped "695" | Feet. 694.523 |
| Houghton, 1.1 miles southeast of, at Isle Royale copper mine, sec. 5, T. 54 N., R. 33 W., on west side of highway at T road; spike in base of telephone pole | 664.64 |
| T. 54 N., R. 33 W., southeast corner of sec. 5, 2.1 miles southeast of Houghton, at Pilgrim station, on east side of highway; spike in base of telephone pole | 617.97 |
| T. 54 N., R. 33 W., northeast corner of sec. 17, at T road, 3.4 miles southeast of Houghton; iron post stamped "621" | 620.527 |
| Chassell, 1 mile north of, at T road, northeast corner of sec. 32, T. 54 N., R. 33 W., on east side of highway; spike in base of telephone pole | 620.01 |
| Chassell, in middle of village, at street crossing, southeast corner of sec. 32, T. 54 N., R. 33 W.; iron post stamped "625" | 624.878 |
| Chassell, 1.2 miles west of, at road crossing, northwest corner of sec. 6, T. 53 N., R. 33 W.; spike in base of fence post | 863.49 |
| T. 53 N., R. 34 W., northwest corner of sec. 12, 2.2 miles west by 1 mile south of Chassell; spike in root of stump | 966.39 |
| T. 53 N., R. 34 W., sec. 11, 3 miles west by 1.8 miles south of Chassell, in rock near Adolph Poisson's residence; aluminum tablet stamped "Prim. Trav. Sta. No. 2, 988" | 988.178 |
| T. 53 N., R. 34 W., sec. 3, 4 miles east of Painesdale, at Isaac Beltry's residence; spike in root of stump holding flagpole | 873.94 |
| T. 54 N., R. 34 W., west side of sec. 34, at T road, 2.5 miles east of Painesdale; copper nail in root of stump | 914.35 |
| Painesdale, Copper Range R. R. station, 10 feet east of northeast corner of; copper nail in platform | 1,203.92 |

From Houghton north along highways to lighthouse at ship canal entry.

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| Houghton, in stone foundation wall of brick building of L. Hennes & Co., north face of wall, about 3 feet from northeast corner, 5 feet above ground; aluminum tablet stamped "612" | 611.568 |
| T. 55 N., R. 34 W., sec. 34, 2.1 miles northwest of Houghton, at road forks, on north side of highway, 200 feet north of overhead crossing; spike in base of fence post | 641.12 |
| T. 55 N., R. 34 W., sec. 28, 2.8 miles northwest of Houghton, at Michigan Smelts, at road forks; spike in base of telephone pole | 619.08 |
| T. 55 N., R. 34 W., northeast corner of sec. 20, at T road, 5.1 miles northwest of Houghton; iron post stamped "714" | 713.986 |
| T. 55 N., R. 34 W., sec. 8, 6.6 miles northwest of Houghton, at Oskar, in front of residence; spike in base of telephone pole | 616.88 |
| T. 55 N., R. 34 W., sec. 4, at lane leading to farm, 8.1 miles northwest of Houghton, in field on east side of highway; spike in base of telephone pole | 675.74 |
| T. 56 N., R. 34 W., sec. 28, 10.6 miles northwest of Houghton, at ship canal entry, on lawn in front of lighthouse, at base of flagpole; iron post stamped "624" | 624.060 |

From point 4.8 miles east of Redridge west along highway to Redridge, thence south along Copper Range R. R. to Painesdale.

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| T. 55 N., R. 34 W., sec. 18, 4.8 miles east of Redridge, at lane leading to Dr. Stinback's residence, on north side of highway, in root of large stump; copper nail..... | Feet. 720.33 |
| T. 55 N., R. 35 W., southeast corner of sec. 13, at road crossing, 3.8 miles east of Redridge, in base of fence post; copper nail..... | 734.13 |
| T. 55 N., R. 35 W., south side of sec. 14, 2.3 miles east of Redridge, in corner of field on north side of highway; iron post stamped "832"..... | 831.90 |
| Redridge, on railroad trestle over spillway of reservoir, in southwest corner of west concrete abutment; aluminum tablet stamped "Prim. Trav. Sta. No. 6, 692"..... | 692.364 |
| Salmon Trout, 0.7 mile west of, 1,600 feet west of bridge; spike in base of whistle post..... | 761.34 |
| Salmon Trout, south side of railroad, 1,600 feet east of bridge, at base of telephone pole; iron post stamped "781"..... | 780.805 |
| Salmon Trout, 1 mile east of switch, on south side of railroad opposite milepost; spike in base of telephone pole..... | 847.82 |
| Obenhoff, 0.7 mile west of, on south side of railroad; spike in base of whistle post..... | 963.42 |
| Obenhoff, 100 feet east of east end of switch, on south side of railroad near telephone pole; iron post stamped "998"..... | 997.898 |
| Obenhoff, 1 mile east of station, on south side of railroad opposite milepost; spike in base of telephone pole..... | 1,049.95 |
| Mill Mine Junction, 1 mile northwest of, 100 feet south of milepost, on west side of railroad; spike in base of telephone pole..... | 1,127.19 |
| Mill Mine Junction, in southwest corner of platform at station, 4 feet northeast from railroad crossing, 1 foot above level of track; copper nail.... | 1,123.43 |
| South Range railroad station, in southwest corner of platform; copper nail.. | 1,139.77 |
| South Range, 20 feet southwest of southwest corner of South Range Bank building, in yard; iron post stamped "1141"..... | 1,140.790 |
| South Range, 1 mile south of, on east side of railroad; spike in base of milepost..... | 1,138.83 |
| Trimountain, on east side of railroad, 40 feet east of northeast corner of station; spike in base of telephone pole..... | 1,154.33 |

APPENDIX A.

ELEVATIONS ADJUSTED BY THE COAST AND GEODETIC SURVEY FROM PRECISE LEVELING.

Algonac, Alpena, Bay City, Bay Mills, Benton Harbor, Burnt Island, Chief, Copper Harbor, Crosswell, Detour, Detroit, Escanaba, Fennville, Gardendale, Good Hart, Grindstone City, Groscap, Grossepoint, Harbor Beach, Harvey, High Island, Holland, Marine City, Marinette, Marquette, Monroe, Montague, Mount Clemens, Munising, Muskegon, Pickford, Port Huron, Raber, Rock, Saginaw, St. Ignace, Sault Ste. Marie, South Fox Island, South Haven, South Manitou, Whiskey, and Wyandotte quadrangles.

**ALGER, ALLEGAN, ALPENA, BAY, BERRIEN, CHIPPEWA, DELTA, HURON, KEWEE-
NAW, LEE LANAU, MACKINAC, MACOMB, MANISTEE, MARQUETTE, MONROE,
MUSKEGON, OTTAWA, PRESQUE ISLE, ST. CLAIR, SANILAC, AND WAYNE COUNTIES.**

The following descriptions and elevations are taken from reports of the Coast and Geodetic Survey and of the Corps of Engineers, United States Army, and are republished by permission of the chiefs of those bureaus. The bench marks were established from precise levels by the Coast and Geodetic Survey, by the United States Lake Survey, by the Corps of Engineers, and by the Board on Deep Waterways. Most of them were included in the 1903 adjustment by the Coast and Geodetic Survey and were not changed by the 1907 or the 1912 adjustment. The elevations are likely to be changed but slightly by any future adjustment.

ALGONAC QUADRANGLE.

[Latitude 42° 30'–42° 45'; longitude 82° 30'–82° 45'.]

From point near New Baltimore to Marine City.

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| New Baltimore, in southwest end of, northwest side of Main Street, in front face of foundation of house owned by heirs of Edward Roe, 7 inches west of cellar window and 5 inches below water table; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 34)..... | Feet. 590.255 |
| New Baltimore, 2,300 feet below Washington Street, southwest side of road, in fence line, just south of Ed. Roe's house, on base of willow tree 18-inches in diameter; 20-penny spike with washer (U. S. Deep Wy. T. B. M. 93)..... | 584.534 |
| New Baltimore, southwest corner of Main and Washington streets, on corner building owned by William Baker, north side, in window base of west window, 9 inches east of west end of stone and 4 inches from its front edge; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 33)..... | 588.611 |
| New Baltimore, 1,900 feet above Washington Street, on east side of Main Street, northwest corner of Henry C. Schnoor's residence, in water table, 6 inches east of its west end; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 32)..... | 600.078 |

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| New Baltimore, in north limits of, 345 feet south of crossing of Detroit & River St. Clair Ry., just east of east road fence, on base of 20-inch maple tree; 20-penny spike with washer (U. S. Deep Wy. T. B. M. 92)..... | Feet. 562.118 |
| Anchorville, 1.2 miles west of, 0.2 mile west of Mr. Wendler's farmhouse, 85 feet west of small bridge over gully, south side of Detroit & River St. Clair Ry., on base of lone 16-inch elm tree; 20-penny spike with washer (U. S. Deep Wy. T. B. M. 91)..... | 566.237 |
| Anchorville, 1.2 miles east of north side of road, just north of fence in front of Thomas Beauvais's house, in base of 3-foot lone cottonwood tree; 20-penny spike with washer (U. S. Deep Wy. T. B. M. 89)..... | 565.279 |
| Fair Haven, 1 mile west of, 0.5 mile east of Swan Creek, southwest corner of Mrs. C. Roe's house, south face, in foundation, fourth course above ground, second course below water table; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 31)..... | 563.806 |
| Fair Haven, at Henry C. Schnoor's stave mill, in south face of brick chimney, near boiler-room door, in tenth brick east from west face and in twenty-second course of brick above ground; brass bolt (U. S. Deep Wy. P. B. M. 30)..... | 563.496 |
| Algonac, 1.2 miles west of River Street, 170 feet west of fork of back road to Marine City, south side of road, 3 feet south of fence; 20-penny spike in root of large lone oak tree (U. S. Deep Wy. T. B. M. 75)..... | 566.147 |
| Algonac, in foundation of public school building, at northeast corner of east wing, in north face of corner stone; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 29)..... | 564.900 |
| Algonac, in foundation of town hall, on its east face, sixth brick south from northeast corner and in eighth course of brick above stone foundation; brass bolt (U. S. Deep Wy. P. B. M. 28)..... | 565.150 |
| Algonac, northwest corner of River and Smith streets, on foundation of Mr. Moore's house, south side, second stone west from southeast corner, 2.6 feet from corner (U. S. Deep Wy. Gage B. M. R.)..... | 565.162 |
| Algonac, northeast corner of Smith and River streets, in front of J. A. Smith's house, on east root of 3-foot elm tree; spike with washer (U. S. Deep Wy. T. B. M. 73)..... | 562.180 |
| Roberts Landing, 1.2 miles below, on east edge of road, 230 feet below dock to Grummonds Grove; spike with washer in base of 2-foot hickory tree (U. S. Deep Wy. T. B. M. 71)..... | 561.235 |
| Roberts Landing, 0.5 mile below, 40 feet south of lane running west between road and O'Leary's barn; spike with washer in base of lone 2-foot hickory tree (U. S. Deep Wy. T. B. M. 70)..... | 562.579 |
| Roberts Landing, 0.5 mile north of, on river front, on house owned by D. B. Shier and A. S. Freeman, on north face in corner brick at northwest corner of kitchen, in sixteenth course above ground; brass bolt (U. S. Deep Wy. P. B. M. 27)..... | 565.203 |
| From Algonac to lower lighthouse at St. Clair Flats Canal. | |
| Herson Island, on east side of, in front of Porter J. White's cottage; nail in center of 2-inch square cut in root on east side of large basswood tree (U. S. Lake Survey P. B. M. Herson Island)..... | 561.416 |
| St. Clair Flats Canal, at upper end of, on north side of Upper Lighthouse, in northeast corner of second step of stone stairway; brass bolt marked "U. S. ●B. M." (U. S. Lake Survey P. B. M. Upper Light)..... | 561.576 |
| St. Clair Flats Canal, at lower end of, on east side of Lower Lighthouse, in center of stone over middle cellar window; brass bolt marked "U. S. ●B. M." (U. S. Lake Survey P. B. M. Lower Light)..... | 561.212 |

From point 2.5 miles above Algonac to head of St. Clair Flats Canal.

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| Roberts Landing, 0.8 mile below, 2.5 miles above Algonac, on property of John O'Leary, 14 meters back from water's edge of St. Clair River, 190 meters south of east end of lane running across north end of O'Leary's farm, 64 meters southeast of 30-inch maple tree, 139 meters northeast of 36-inch elm tree, 109 meters northeast of fence junction on east side of road, 109 meters north of junction of fence and water's edge, 310 meters above residence of James Harrow, and 479 meters below Elms Club; square on boulder (U. S. Lake Survey B. M. O'Leary)..... | Feet. 578. 660 |
| Algonac, 1.2 miles north of Pleasant Street, on line of fence which is north line of property of John Trix, 6 meters southeast of 14-inch white-willow tree, 11 meters northeast of 15-inch one, 200 meters north of Bailey's Creek, 1,100 meters north of T. B. M. 17; nail in center of square cut in top cap of sheet piling and directly over a pile (U. S. Lake Survey T. B. M. 18)..... | 578. 259 |
| Algonac, north end of, 0.5 mile north of center of town, 380 meters north of waterworks, opposite most northerly one of two steamboat slips, 120 meters south of angle in road and 190 meters south of Coxs Creek, at east edge of sidewalk, in line of fence between properties of Peter Pocket and George Stromley; nail in 36-inch cottonwood stump on west side of Water Street (U. S. Lake Survey T. B. M. 17)..... | 583. 102 |
| Algonac, 3 meters east of Water Street, 275 meters southwest of junction of Liberty and Water streets, 25 meters west of water's edge of North Channel, on line of south side of Pearl Beach Road, 194 meters northeast of bridge over canal, 22.5 meters from street corner on north side of road and 21 meters from street corner on south side of road, 23.5 meters east of P. B. M. Water Street; nail in west root of 36-inch elm tree (U. S. Lake Survey T. B. M. 16)..... | 583. 224 |
| Algonac, at junction of Water Street and Pearl Beach Road, 3.5 meters west of west side of Water Street, 0.4 meter north of fence on south side of road, 23.5 meters west of T. B. M. 16, 194 meters northeast of bridge over canal, 275 meters southwest of junction of Liberty and Water streets, 635 meters southwest of junction of Pleasant and Water streets; copper bolt in cement block, surmounted by 2-inch iron pipe (U. S. Lake Survey P. B. M. Water Street), elevation of bolt..... | 579. 918 |
| Top of pipe..... | 584. 038 |
| Algonac, 1 mile southwest of junction of Pleasant and Water streets, 2 meters from water's edge of North Channel, at most southerly point of Point aux Chenes; wire nail in top of 3-inch willow stump (U. S. Lake Survey B. M. River Crossing Hub 4)..... | 577. 280 |
| Algonac, 1.2 miles southwest of, 20 meters east of north end of north-south road across head of Herson Island (road passes 200 meters west of Grand Point Hotel); nail in west root of 15-inch maple tree (U. S. Lake Survey T. B. M. 15)..... | 579. 082 |
| Algonac, 1.2 miles southwest of, 1.8 meters north of fence line, on south side of road running along south bank of North Channel, 1.5 meters west of fence line on west side of north-south road across Herson Island passing 200 meters west of Grand Point Hotel; copper bolt in cement block surmounted by iron pipe (U. S. Lake Survey P. B. M. North Channel), bolt.. | 576. 349 |
| Top of pipe..... | 580. 491 |

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| Algonac, 3 miles southwest of, 8.5 meters from east corner of porch on front of store owned by William La Croix, 12.5 meters from south corner of white house northeast of store, directly back of Sans Souci dock, 11 meters back from center of road along right bank of St. Clair River, on east side of Herson Island; nail in top of 24-inch maple stump (U. S. Lake Survey T. B. M. 13)..... | Foot 580 |
| Algonac, 3 miles southwest of, on property of William La Croix, directly back and in line of northeast side of William La Croix's store, 0.85 meter south of east corner of ice house, 0.7 meter from southeast side, directly back of San Souci dock, on east side of Herson Island; copper bolt in cement block, surmounted by iron pipe (U. S. Lake Survey P. B. M. San Souci), bolt..... | 575 |
| Top of pipe..... | 580 |
| Algonac, 3.5 miles southwest of, on east side of Herson Island, 142 meters southwest of Maple Leaf dock, 35 meters southwest of a canal, in one of a row of trees on northwest side of road, fourth tree southwest of canal; nail in north root of 15-inch maple tree (U. S. Lake Survey T. B. M. 12).... | 578 |
| Algonac, 4 miles southwest of, 70 meters southwest of St. Mark's Catholic Church, 44 meters north of Herson Island Lower Light (No. 7), 900 meters southwest of Maple Leaf dock, 1,900 meters northeast of Muir's, on east side of Herson Island; nail in stump of small double poplar tree (U. S. Lake Survey T. B. M. 11)..... | 578 |
| Joe Bedores, 1.5 miles east of, 0.3 meter from trunk of tree, in first tree in front row of trees along right bank of St. Clair River, 2.5 meters from water's edge, directly in front of south corner of the Muir House, 2.5 meters southwest of walk between the Muir House and the dock in front of same, on east side of Herson Island; nail in west root of 10-inch maple tree (U. S. Lake Survey T. B. M. 9)..... | 578 |
| Joe Bedores, 1.5 miles east of, opposite head of Bassett Channel and the Canada Club, on line of second row of trees back from water's edge, right bank of St. Clair River, 1 meter north of third tree south of south corner of Muir House, 14 meters southwest of south corner of Muir House, 9 meters back from water's edge, half way between Muir House and first cottage southwest, on east side of Herson Island; copper bolt in cement block surmounted by iron pipe (U. S. Lake Survey P. B. M. Muir), copper bolt..... | 575 |
| Top of pipe..... | 580 |
| Joe Bedores, 0.8 mile east of, 10.5 meters in front of "Idle-Hours" cottage, 50 meters west of Southeast Bend Middle Light (No. 5), on east side of Herson Island, 0.8 mile west of head of Bassett Channel; spike in plank over the center of most northerly pile in sheet piling (U. S. Lake Survey T. B. M. 8)..... | 577. |
| Joe Bedores, 1.8 miles west of, 10 meters in front of small white cottage with log cabin in rear and belonging to A. Weber, 53 meters northeast of p. b. m. Weber, 200 meters northeast of Maybury Highway, 980 meters northeast of Star Island House; wire nail in top of 8-inch stump (U. S. Lake Survey T. B. M. 5)..... | 577. |
| Joe Bedores, 1.2 miles west of, on property of J. F. Weber, 6 meters northeast of sheet piling along right bank of St. Clair River, 38 meters northeast of canal, 28 meters southeast of canal, 37 meters southwest of canal, 53 meters southwest of t. b. m. 5, 85 meters northeast of J. F. Weber's cottage, 150 meters northeast of Maybury Highway, 925 meters northeast of Star Island House, 750 meters southwest of Riverside Hotel; copper | |

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| bolt in cement block surmounted by iron pipe (U. S. Lake Survey P. B. M. Weber), copper bolt..... | Feet. 575. 526 |
| Top of pipe..... | 579. 642 |
| Joe Bedores, 1.8 miles west of, 0.5 meter from trunk of tree, 1.6 miles north-east of head of St. Clair Flats Canal, northeast one of second row of trees back from water's edge, right bank of St. Clair River, southeast one of northeast row on Star Island House grounds; nail in northwest root of 30-inch willow tree (U. S. Lake Survey T. B. M. 4)..... | 578. 442 |
| St. Clair Flats Canal, 500 meters above head of, one meter from heart of tree, 44 meters northeast of east corner of Old Club, 14 meters from east corner of Old Club dock, 36 meters from south corner of dock on northeast side of canal, 56 meters south of P. B. M. Old Club; nail in northwest root of 18-inch cottonwood tree which stands at east corner of grounds of Old Club (U. S. Lake Survey T. B. M. 2)..... | 578. 120 |
| St. Clair Flats Canal, 500 meters above head of, in corner formed by south-east side of building and southwest side of porch of same, 3.7 meters from south corner of building, 0.7 meter from junction of building and porch, 1.5 meters from south corner of porch, this building was originally a bowl-ing alley but is now used as a regular quarters in connection with the main clubhouse, 20 meters north of south corner of dock on north side of canal which passes between this building and the main clubhouse; copper bolt in cement block, surmounted by iron pipe (U. S. Lake Survey P. B. M. Old Club), copper bolt. | 576. 633 |
| Top of pipe..... | 580. 765 |

ALPENA QUADRANGLE.

[Latitude 45°-45° 15'; longitude 83° 15'-83° 30'.]

On Thunder Bay Island.

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|---|---------|
| Thunder Bay Island, Lake Huron; top of stone door sill of Thunder Bay Island Lighthouse (U. S. Lake Survey B. M. Lighthouse)..... | 587. 37 |
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At Alpena.

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|---|----------|
| Alpena, at northwest corner of McRae dock below Second Street draw-bridge; top of capping timber (U. S. Lake Survey B. M. McRae dock).. | 586.263 |
| Alpena, at corner of Fletcher and Dock streets; top of water table of Beck Building (U. S. Lake Survey B. M. Beck Building)..... | 592. 115 |

BAY CITY QUADRANGLE.

[Latitude 43° 30'-43° 45'; longitude 83° 45'-84'.]

In Saginaw Bay.

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| Saginaw Bay, at mouth of Saginaw River, Lake Huron; top of crib of Saginaw River Front Range Light (U. S. Lake Survey B. M. Range Light)..... | 589. 255 |
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Along Saginaw River.

The following bench marks along the Saginaw River were established by primary leveling of the U. S. Corps of Engineers; a single line of levels verified by subsequent lines of wye leveling.

| | |
|---|----------|
| Bay City, 23d Street, north side of east approach marked "A" (15th post from east end), in top of 10 by 12 inch cross timber; top of ½-inch drift bolt (U. S. Corps of Engineers B. M.) | 591. 901 |
| Bay City, Cass Avenue, in concrete curb on north side of road, 7.5 feet east of storm sewer grating at extreme west end of pavement, about 14 feet east of railroad track; cross cut (U. S. Corps of Engineers B. M.) | 586. 985 |

- Bay City, Interurban, in top of extreme west stone abutment of bridge, about under the axis of the track; cross cut (U. S. Corps of Engineers B. M.)
- Melbourne, in top of pile about 3 feet above ground on straight part of shore west of gage; nail (U. S. Corps of Engineers B. M.)
- Loveland's, in trunk of 5-inch slanting willow tree about 50 feet south of mouth of slip opposite Loveland's pump house, from which shanty marked "Pleasant View" bears N. 20° 62.2 feet to corner; circle of five nails (U. S. Corps of Engineers B. M.)
- New York Works, in shoulder cut in pile standing about 2 feet above ground at intersection of shore line and upper end of New York Works landing dock; top of railroad spike driven flush (U. S. Corps of Engineers B. M.)
- Zilwaukee, in top of concrete foundation at southwest corner of high tension transmission tower on left bank of river; cross cut (U. S. Corps of Engineers B. M.)
- Bay City, corner of 4th and Water streets, on most westerly basement window of Alert Pipe and Supply Co.'s store (U. S. Corps of Engineers B. M.)

BAY MILLS QUADRANGLE.

[Latitude 46° 15'–46° 30'; longitude 84° 30'–84° 45']

From point near Brimley to Iroquois Point.

- Duluth, South Shore & Atlantic Ry., 21.5 feet north of 9-mile post, 31 feet west of center of track, under 6-inch square cedar post, in summit of stone buried to depth of 4 feet; copper bolt (U. S. Lake Survey P. B. M. 3).
- Brimley, on Duluth, South Shore & Atlantic Ry., 200 feet east of station, 34.5 feet north of center of track, 192 feet west of west end of Waikwa River railroad bridge, due north of frog for branch railroad across Waikwa Bay, under red sandstone marked "U. S. B. M. No. 4," in top of stone monument; copper bolt (U. S. Lake Survey P. B. M. 4).....
- Bay Mills, 8 inches from west and 7 inches from north side of pedestal (marked "U. S.") on southeast foundation for the steel water-tank tower which stands on south side of Hall and Munson's factory power house; brass bolt (U. S. Lake Survey P. B. M. Bay Mills).....
- Bay Mills, 2.5 miles above, at top of point of sand terrace in upper end of mission and on west side of broad ravine running back from St. Marys River, 4 meters back from crest of high bank on river, 16 meters northeast of spruce tree blazed with a 4-inch triangle, 42 meters east of log house owned by Duel Cameron, 142 meters above small bridge over small creek crossing road in bottom of ravine, 1 mile above store at lower end of mission, under an 8 by 10 by 15 inch sandstone, in top of sandstone 14 by 10 by 6 inches, buried 3 feet under ground; brass bolt (U. S. Lake Survey P. B. M. Mission) (Surface stone is marked "U. S. P. B. M.") ..
- Iroquois Point, in ground at east side of lighthouse yard, 2 feet west of north-south fence, 37.5 feet east of northeast corner of lighthouse building, on line with north side of building, in top of stone monument marked "U. S."; brass bolt (U. S. Lake Survey P. B. M. Δ).....
- Iroquois Point, 4 meters east of walk from lighthouse to engine house, 29 meters south of east entrance of engine house, 60 meters south of shore of St. Marys River, 30 meters north of high bank, in top of bowlder; iron bolt (U. S. Lake Survey P. B. M. Iroquois).....

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| Iroquois Point, in southeast corner of lighthouse yard, 1 foot from south fence and 2 feet from east fence, 11.5 meters east and 18 meters south of extreme southeast corner of lighthouse building, under stone marked "U. S. P. B. M.," in top of stone 8 by 8 by 20 inches buried 2.5 feet in ground; brass bolt (U. S. Lake Survey P. B. M. Iroquois 1)..... | Feet. 615.094 |
| Iroquois Point, on north side of Iroquois Lighthouse, in top of course of masonry of foundation of lighthouse, in center of large stone; brass bolt (U. S. Lake Survey P. B. M. Iroquois Lighthouse) marked "U. S. P. B. M."..... | 622.033 |
| Iroquois Point, square notch cut in top of foundation of lighthouse on north side and 5 feet west of p. b. m. Iroquois Lighthouse; marked \square B. M. (U. S. Lake Survey P. B. M.)..... | 622.705 |

CHIEF QUADRANGLE.[Latitude $44^{\circ} 15' - 44^{\circ} 30'$; longitude $86^{\circ} - 86^{\circ} 15'$.]**At Onekama.**

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| Onekama, on east shore of Lake Michigan, at entrance to Portage Lake, old bank building; top of square cut on southeast corner of first stone in sill west of doorway, marked "U. S. B. M." (U. S. Lake Survey B. M. Onekama)..... | 589.71 |
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BENTON HARBOR QUADRANGLE.[Latitude $42^{\circ} 15' - 42^{\circ} 30'$; longitude $86^{\circ} 15' - 86^{\circ} 30'$.]**At St. Joseph.**

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| St. Joseph, in grounds of life saving station, at right angle 38.85 feet from north pier station 13 plus 46 and 52.70 feet from southwest corner of boathouse of life-saving station, 4 inches below surface of ground and covered with a 4 by 4 by $\frac{1}{2}$ -inch iron washer; top of cap of vertical iron pipe (U. S. Lake Survey B. M.)..... | 585.240 |
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BURNT ISLAND QUADRANGLE.[Latitude $46^{\circ} - 46^{\circ} 15'$; longitude $83^{\circ} 45' - 84^{\circ}$.]**From point 2.2 miles west of Detour to Gatersville.**

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| Detour, 2.2 miles west of, in bank on south side of county road, 25 meters east of crest of large hill, 11 meters east of very large limestone boulder lying on north side of road; small square cut on top of limestone boulder, marked "U. \square S." (U. S. Lake Survey T. B. M. 190)..... | 657.203 |
| Detour, 4.5 miles west of, 364 meters east of point where wagon road leaves water's edge of Caribou Lake, 2.5 meters north of center of wagon road, 50 meters south of Caribou Lake, under 6-inch cedar post marked "U. S. B. M." on opposite sides, in top of cut stone buried in sand; iron bolt (U. S. Lake Survey P. B. M. Caribou)..... | 639.441 |
| Schlesser post office, 1 mile west by 1 mile north of, at Rusks Corners, 1 mile north of Camerons Corners, in center of road leading west, near west fence line of north-south road, 57.5 meters northeast of northeast corner of schoolhouse, 190 meters east of creek crossing road, 17.5 meters northwest of fence corner, 15.5 meters southwest of another fence corner, under 6 by 8 by 14 inch stone, in top of cut stone marked "U. S. P. B. M."; iron bolt (U. S. Lake Survey P. B. M. Schlesser)..... | 702.923 |

COPPER HARBOR QUADRANGLE.

[Latitude 47° 15'–47° 30'; longitude 87° 45'–88°.]

Bench marks of U. S. Lake Survey.

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| Copper Harbor, on north side of Keweenaw Peninsula, on south side of Lake Superior; square cut on northwest corner of doorsill of lighthouse tower (U. S. Lake Survey B. M. Copper Harbor)..... | Feet. 627. 56 |
| Keweenaw Point, south side, at entrance to Mendota Ship Canal, at north-east corner of main part of light keeper's dwelling at Mendota Lighthouse; cross cut in square on water table, U. S. B. M. is cut in cement walk adjacent (U. S. Lake Survey B. M. Mendota Lighthouse)..... | 607. 44 |

CROSWELL QUADRANGLE.

[Latitude 43° 15'–43° 30'; longitude 82° 30'–82° 45'.]

At Lexington.

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| Lexington, northeast corner of Main and Lake streets; center of period between the letters M. and E. in the center of corner stone of M. E. Church, 3 feet above ground and 9 inches north of southwest corner; corner stone is marked "First M. E. Church 1851–1890" (U. S. Lake Survey P. B. M. 1)..... | 623. 496 |
| Lexington, at northeast corner of Main and Boynton streets, on top of water table on west side of two-story brick building owned by John L. Fead, 25 inches north of southwest corner of building and 3 inches back from front of water table; summit of small square (U. S. Lake Survey P. B. M. Lexington 2)..... | 619. 631 |
| Lexington, in north end of stone sill of north door of City Hall, 3 inches south of north end of sill and 19.5 inches back of front edge, 10 feet south of northwest corner of building (building is a three-story brick and fronts on Main Street between Huron Avenue and Simons Street; ground floor used for hose house, second floor for council room, and third floor for Masonic Hall); brass bolt (U. S. Lake Survey P. B. M. Lexington 3).... | 622. 663 |
| Lexington, in front yard of Mrs. Martha Henry's property, 22 meters north of north end of Dallas Street and north side of Simons Street (foot of street is at dock), 40 meters back from high bank of lake and about 125 meters south of Lexington Woolen Mills, in top of large granite boulder; brass bolt (U. S. Lake Survey P. B. M. Lexington 4)..... | 612. 843 |

DETOUR QUADRANGLE.

[Latitude 45° 45'–46°; longitude 83° 45'–84°.]

From Detour along St. Marys River 2.2 miles west.

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| Detour, on gravel beach on east shore of bay and on west side of Detour Point, 65 meters north of boathouse belonging to Detour Lighthouse, 74 meters northeast of outer end of pier at boathouse, 3 meters east of water's edge, 7 meters west of edge of brush, 300 meters from Detour Lighthouse, in top of limestone boulder 6 inches from north edge, marked "U. S."; brass bolt (U. S. Lake Survey P. B. M. Boathouse)..... | 582. 177 |
| Detour, 11 meters northwest of northwest corner of light keeper's dwelling, in top of large limestone boulder; brass bolt (U. S. Lake Survey P. B. M. Detour 5)..... | 590. 461 |
| Detour, 5 meters north by 1.5 meters east of northwest corner of tower of Detour Lighthouse, in summit of very large limestone boulder, marked "U. S.+P. B. M."; brass bolt (U. S. Lake Survey P. B. M. Detour 4)... | 594. 976 |

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|---|-------------------|
| Detour, intersection of cross cut on top of iron plate about 6 inches northwest of northwest corner post of Detour Lighthouse (U. S. Lake Survey P. B. M. Detour 3)..... | Feet. 591. 259 |
| Detour Point, at northeast corner of residence at Detour Lighthouse, 1 meter north and 3 meters west of northeast corner of house, 3 meters from northwest corner of tower; small square cut on top of embedded limestone boulder (U. S. Lake Survey T. B. M. 196)..... | 590. 717 |
| Detour, near center of foot of St. Marys Street, 35 meters from water's edge of St. Marys River, 7 meters south by 1.5 meters east of corner of sidewalk, 1 block north of Anthony's dock, 70 meters east and 8 meters south of southwest corner of Hotel Detour, owned by J. F. Goetz, in top of granite boulder; brass bolt (U. S. Lake Survey P. B. M. Goetz)..... | 602. 368 |
| Detour, 85 meters east by 20 meters south of Huron House, 55 meters south of Bennett's store and post office, 17 meters from water's edge of St. Marys River, 24 meters northeast of northeast corner of J. T. Bennett's yard near Anthony's coal dock, in top of granite boulder flush with ground; iron bolt (U. S. Lake Survey P. B. M. Detour 2)..... | 586. 531 |
| Detour, at junction of Superior and Huron streets, 2 meters west of east line of Superior Street, at a point where Superior Street angles to west, 8 meters northwest of large granite boulder, 17.5 meters east of fence corner which is southeast corner of block, southeast corner of Mr. Richard Terrett's yard, 26.5 meters southeast of northeast corner of Mr. Terrett's house, 22 meters northeast of log house, 80 meters northwest of water's edge of St. Marys River, 1 block south of P. B. M. Detour 1, in top of limestone boulder; brass bolt, marked "U. S. P. B. M." (U. S. Lake Survey P. B. M. Terrett)..... | 599. 697 |
| Detour, at intersection of Superior and Drummond streets, 4 meters north by 3 meters east of fence corner at southeast corner of street intersection, under cedar post having letters "U. S. B. M." cut on opposite side of post, in top of cut stone; iron bolt (U. S. Lake Survey P. B. M. Detour 1).... | 611. 875 |

On Pipe Island.

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|--|---------|
| Pipe Island, in lower part of St. Marys River, 50 feet from water's edge, 20 feet west of walk from small wharf to light keeper's house, under a cedar tree; on top of boulder on surface of ground (U. S. Lake Survey B. M. Pipe Island)..... | 585. 27 |
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DETROIT QUADRANGLE.

[Latitude 42° 15'–42° 30'; longitude 83°–83° 15'.]

At Detroit.

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| Detroit, at foot of Woodward Avenue, on east side of street, in most easterly doorway of building just north of U. S. customhouse at ferry landing; cross cut in stone sill 1 inch from east end and 2 inches from its face (U. S. Lake Survey B. M. A, Detroit)..... | 580. 828 |
| Detroit, at Fort Wayne, in northeast corner of U. S. military reservation, on south side of brick warehouse of U. S. Lake Survey, east of door, in brick; brass bolt (U. S. Lake Survey B. M. Warehouse)..... | 584. 317 |
| Detroit, at Fort Wayne, in northeast corner of U. S. military reservation, on southeast corner of brick warehouse of U. S. Lake Survey; top of shelf cut on corner of water table (U. S. Lake Survey B. M. Corner)..... | 581. 227 |
| Detroit River Lighthouse, at mouth of Detroit River in Lake Erie; top of coping of masonry at southwest angle of building (U. S. Lake Survey B. M. Lighthouse)..... | 584. 79 |

From Tecumseh salt works to Detroit waterworks.

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|---|-------------------|
| Tecumseh salt works, north edge of evaporating shed, 42 feet west of northeast corner, in pile supporting shed (pile is only partly under building); top of 20-penny spike (U. S. Deep Wy. gage B. M. C)..... | Feet. 577. 819 |
| Tecumseh salt works, northwest from b. m. C, 50 feet east of northeast end of boiler room, in yard; top of pentagonal head of hydrant (U. S. Deep Wy. gage B. M. E)..... | 579. 423 |
| Delray, northeast corner of River and Louis streets, on west side of first entrance east from Louis Street, on pedestal stone of west pillar of doorway; southwest corner marked by two lines cut at right angles to each other and forming a square with edges of stone (U. S. Deep Wy. P. B. M. 7) | 593. 319 |
| Detroit, northwest corner of Fort Wayne reservation grounds, south side of River Street, on first base stone of iron fence east of high stone gatepost, on north edge of stone; highest point inside of square (U. S. Deep Wy. T. B. M. 22)..... | 587. 404 |
| Detroit, at Fort Wayne, in southwest quarter of military reservation, on river front of building No. 60, officers' quarters, in center of water-table course, 20 inches east from vertical center line of front of building and 3 feet 5 inches above ground; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 8)..... | 601. 508 |
| Detroit, northwest corner of River Street and Junction Avenue, 10 feet west of hydrant, at side of fire-alarm box 815, on curb; highest point in square cut in stone (U. S. Deep Wy. T. B. M. 23)..... | 585. 910 |
| Detroit, northeast corner of Stanton and River streets, 28 feet east of east side of brick building, in prolongation of property line, at telegraph pole, on curb; highest point in square cut in stone (U. S. Deep Wy. T. B. M. 25). | 590. 890 |
| Detroit, at foot of Eighteenth Street (not cut through), on extreme southeast corner of foundation of roundhouse of Pere Marquette and Detroit & Lima Northern railroads (U. S. Deep Wy. gage B. M. F)..... | 581. 168 |
| Detroit, near northeast corner of Seventh Street, at Nos. 316-320 River Street, on building of Avery Preserving Co., on window base 17.5 inches east of east face of brick pillar at entrance; highest point of square cut in stone (U. S. Deep Wy. T. B. M. 26)..... | 582. 487 |
| Detroit, on southeast corner of Wayne and Woodbridge streets, at Nos. 81-89 Woodbridge Street, on north end of stone doorstep, 3 inches from west face of east pillar; highest point in square (U. S. Deep Wy. T. B. M. 27)..... | 581. 921 |
| Detroit, on south side of Atwater Street east, one block and a half east of Woodward Avenue, on office building of city electric lighting plant, on west end of door stone of front entrance, 5 inches east of west face and 4 inches north of south face; brass bolt marked "U. S. □ P. B. M." (U. S. Deep Wy. P. B. M. 9)..... | 583. 011 |
| Detroit, on Atwater Street, between St. Aubin and Dequindre streets on southeast corner of Detroit Dry Dock Co.'s boiler shop; highest point in square cut in capstone of foundation (U. S. Deep Wy. T. B. M. 28)..... | 581. 718 |
| Detroit, on northwest corner of Mount Elliott Avenue and Wight Street, 90 feet west of Mount Elliott Avenue, 2.5 feet east of prolongation of east face of lighthouse station, 12 feet east of inlet, on curbstone; highest point in square (U. S. Deep Wy. T. B. M. 29)..... | 587. 899 |
| Detroit, on foundation of lighthouse station, at foot of Mount Elliott Avenue, 8.2 feet below outer edge of water table, on west door jamb of south door; cross cut in stone (U. S. Lake Survey B. M. Detroit)..... | 584. 815 |

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|---|------------------|
| Detroit, at northeast corner of Wight Street and Mount Elliott Avenue, north end of doorstep of west entrance to Ireland & Mathews Manufacturing Co., 5 inches from north end of step, 3.75 inches from edge of stone; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 10). | Feet. 592.807 |
| Detroit, near northwest corner of Boulevard and Jefferson Avenue, at No. 1389 Jefferson Avenue, 115 feet west of Boulevard, southwest corner of building, on top stone of foundation; highest point in square (U. S. Deep Wy. T. B. M. 30) | 599.070 |
| Detroit, northwest corner of Jefferson and Crane avenues, on the curving part of curbstone, 10 inches south from Crane Avenue tangent and 4 feet above telegraph pole; highest point in square (U. S. Deep Wy. T. B. M. 31) | 594.060 |

ESCANABA QUADRANGLE.

[Latitude 45° 30'–45° 45'; longitude 87°–87° 15'.]

At Escanaba.

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| Escanaba, northwest corner of Ludington Street and Dauseman Avenue, southeast corner of building of S. Adler; top of water table (U. S. Lake Survey B. M. 1, 1874) | 593.608 |
| Escanaba, in masonry foundation on west side of Escanaba Lighthouse, near northwest corner; copper bolt (U. S. Lake Survey B. M. 3, 1876) | 587.118 |
| Escanaba, in fourth layer of cut stone below red water table of county building, on north side of building, 14 inches from northwest corner; brass bolt (U. S. Lake Survey B. M. Courthouse) | 593.758 |
| Escanaba, on east side and 3 inches from southeast corner of Chicago & North Western Ry. station, in water table; brass bolt (U. S. Lake Survey B. M. Depot) | 618.352 |
| Escanaba, in masonry wing wall of overhead railroad crossing approach to Chicago & North Western Ry. on dock No. 1, 3 inches from face of abutment, and 18 inches above ground; copper bolt (U. S. Lake Survey gage B. M. Escanaba) | 593.39 |

FENNIVILLE QUADRANGLE.

[Latitude 42° 30'–42° 45'; longitude 86°–86° 15'.]

At Saugatuck.

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| Saugatuck, southeast corner of southeast corner stone in foundation under lighthouse; ring chiseled around point and each face of stone marked "B.M." with chisel | 601.345 |
|---|---------|

GARDENDALE QUADRANGLE.

[Latitude 43°–43° 15'; longitude 82° 15'–82° 30'.]

From point near Port Huron to Lexington.

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| Port Huron, 2.2 miles above Black River, at foot of Lake Huron, at Fort Gratiot lighthouse, in south foundation wall of brick dwelling of lighthouse, in upper course of masonry, 2.1 feet from southeast corner and 0.6 foot below water table; copper bolt (U. S. Lake Survey B. M. Fort Gratiot Lighthouse) | 590.342 |
| Fort Gratiot, on top of foundation of oil house (round building) at Fort Gratiot lighthouse; on south side about 3 inches north of edge of cement foundation and 7 inches from south wall of building; summit of small square cut (U. S. Lake Survey T. B. M. 62) | 586.915 |

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|--|-------------------|
| Fort Gratiot, 1.2 miles north of, in northwest root of 2-foot Lombardy poplar tree, which is center one of three, all of about the same size and standing in a northeast-southwest line, 30 meters south of southeast corner of Huronia Beach Hotel, 30 meters east of car track; 30-penny wire nail (U. S. Lake Survey T. B. M. 63)..... | Feet. 589. 820 |
| Lakeport, 2 miles south of, 3 meters west of center of wagon road, 5 meters east of north-south fence on west side of road from Port Huron to Lakeport, 35 meters north of point in road directly west of Mr. Sterling's barn, which stands about 100 meters east of road; wire nail in east root of 10-inch elm tree (U. S. Lake Survey T. B. M. 69)..... | 594. 11 |
| Lakeport, 0.2 mile south of, 10 meters east of north-south fence on west side of road, 15 meters west of top of bank of Lake Huron, in west root of 24-foot white-pine tree which is north one of two large white-pine trees standing in wagon road; wire nail (U. S. Lake Survey T. B. M. 71)..... | 597. 71 |
| Lakeport, in southeast corner of lot 2, block 2, in southeast corner of hotel yard owned by John Thoday, 20 inches north of fence on north side of Milwaukee Street, 14 inches west of fence on west side of Second Street, in 14 by 14 by 8 inch granite stone under 6 by 6 inch granite stone extending 4 inches above ground; brass bolt (U. S. Lake Survey P. B. M. Lakeport)..... | 595. 44 |
| Lakeport, 2 miles north of, 4 meters east of center of State road, in 12-inch willow tree which forks about 7 feet above ground and is blazed with small triangle facing road (there is a grove of young timber on west side of road), in west root; wire nail (U. S. Lake Survey T. B. M. 74)..... | 616. 923 |
| Lakeport, 5 miles north of, east of north-south fence on west side of State road, 150 meters north of creek which crosses the road 5 miles from Lakeport, in front of John Tolle's house, in northeast root of 10-inch elm tree; wire nail (U. S. Lake Survey T. B. M. 79)..... | 626. 968 |
| Lexington, 3.8 miles south of, 3 meters west of north-south fence on west side of State road, 475 meters south of Mill Creek, in Willard Wurdien's front yard, in west root of 3-foot willow tree; wire nail (U. S. Lake Survey T. B. M. 85)..... | 633. 22 |

In the vicinity of Huronia Beach.

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| Huronia Beach, on Lake Huron near foot of lake, 1.5 miles north of Fort Gratiot Lighthouse, 66 feet north of north end of steel footbridge crossing canal connecting Lake Huron with Black River, 75 feet north of north bank of canal, in front of first cottage north of canal (No. 38) on line with breakwater, just west of cement sidewalk, in main north root of 30-inch oak tree; top of 6-inch boat spike (U. S. Lake Survey B. M. Oak)..... | 593. 236 |
| Huronia Beach, on Lake Huron near foot of lake, 1.5 miles north of Fort Gratiot Lighthouse, near north bank of canal connecting Lake Huron and Black River, on inshore part of breakwater which is at right angles with the offshore part, 100 feet from shore line north of breakwater, 50 feet from shore line south of breakwater; 10-inch ship spike in top of center one of row of five piles (U. S. Lake Survey B. M. Breakwater)... | 585. 29 |
| Huronia Beach, on Lake Huron near foot of lake, 1.5 miles north of Fort Gratiot Lighthouse, on south bank of canal connecting Lake Huron and Black River, on southeast foundation pier of steel footbridge across head of canal; top of northeast bolt in bedplate (U. S. Lake Survey gage B. M. Huronia Beach)..... | 583. 91 |
| Fort Gratiot Lighthouse, 640 feet north of, at foot of Lake Huron, on pile breakwater on north property line of U. S. lighthouse reservation, in top of capping timber, over third pile from shore end of cap; top of 60-penny spike (U. S. Lake Survey B. M. Spiles)..... | 587. 30 |

GOOD HART QUADRANGLE.[Latitude $45^{\circ} 30' - 45^{\circ} 45'$; longitude $85^{\circ} - 85^{\circ} 15'$.]**At Ile Aux Galets Lighthouse.**

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| Ile Aux Galets, in north end of Lake Michigan on stone steps leading up to lighthouse tower door, outside northwest corner of third step from ground (no mark given) (U. S. Lake Survey B. M. Lighthouse)..... | Feet. 589. 72 |
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GRINDSTONE CITY QUADRANGLE.[Latitude $44^{\circ} - 44^{\circ} 15'$; longitude $82^{\circ} 45' - 83^{\circ}$.]**At Port Austin.**

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| Port Austin, in rock 13 feet southwest of gage, B. M. cut in rock near it; 6-inch bolt (U. S. Lake Survey B. M. 1873)..... | 590. 97 |
|--|---------|

GROSCAP QUADRANGLE.[Latitude $45^{\circ} 45' - 46^{\circ}$; longitude $84^{\circ} 45' - 85^{\circ}$.]**On St. Helena Island.**

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|--|---------|
| St. Helena Island, in north end of Lake Michigan, on north side of light keeper's dwelling, near northeast corner of limestone sill of east basement window; square cut on top (U. S. Lake Survey B. M. Lighthouse)..... | 588. 48 |
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GROSSE POINTE QUADRANGLE.[Latitude $42^{\circ} 15' - 42^{\circ} 30'$; longitude $82^{\circ} 45' - 83^{\circ}$.]**From Detroit waterworks to station L'Anse Creuse.**

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| Detroit waterworks, on stone foundation of east gatepost of east gate of east driveway entrance from Jefferson Avenue to grounds, 3 inches from pillar; highest point in square cut on stone (U. S. Deep Wy. T.B.M. 32)..... | 583. 398 |
| Detroit, at waterworks, on standpipe tower on side facing river, on southwest end of doorstone of entrance to tower, 5 inches northeast from vertical face and 4 inches from edge of stone; brass bolt marked "U.S.P.B.M." (U. S. Deep Wy. P.B.M.11)..... | 587.561 |
| Windmill Point lighthouse station, on center and top of concrete coping of sea wall, 27.5 inches from its west end, south from keeper's house; highest point of square cut in cement (U. S. Deep Wy. T. B. M. 38)..... | 579. 625 |
| Windmill Point, on southwest corner of lighthouse keeper's house, 2 feet 5 inches east from sloping corner, in third course of masonry below water table and 3.5 feet above ground; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 12)..... | 584. 218 |
| Windmill Point, in north by east face of foundation of lighthouse tower, in fifth course of masonry below cut stone water table; horizontal groove cut in stone slab $2\frac{1}{2}$ by $1\frac{1}{2}$ inches on face, set in flush with masonry (U. S. Lake Survey Old B. M.)..... | 582. 760 |
| Grosse Pointe, 95 feet northeast of red brick schoolhouse on east side of electric track, 15 feet northeast of "Shafer's 7-mile post," at surface of ground, in brace for telegraph pole; spike (U. S. Deep Wy. T. B. M. 37)..... | 583. 376 |
| Grosse Pointe (Cottage Grove post office), on southwest corner of Charles Seitz's house, 7.5 feet west of corner, 4.5 inches below west end of stone window sill, 2 feet 2.5 inches above stonework of foundation, in second course of brickwork below window sill; brass bolt (U. S. Deep Wy. P. B. M. 13)..... | 592. 079 |

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| Grosse Pointe, 0.6 mile northeast from house of Country Club, on top of knob on northeast corner (which is highest point) of harbor line stone monument, marked "Harbor Line Reference Point b," at intersection of street fence line and property line (U. S. Lake Survey T. B. M. 96)..... | Feet. 589. 455 |
| Grosse Pointe Farms, 0.8 mile from Country Club house on Lake Shore wagon road, in sandstone water table of Catholic Church, 1.2 meters above ground, 0.7 meter west of corner; brass bolt (U. S. Lake Survey P. B. M. 35)..... | 604. 936 |
| Grosse Pointe Farms, 0.8 mile northeast of Country Club house on Lake Shore wagon road, in foundation at southeast corner of Catholic Academy of the Sacred Heart, on face of building 0.5 meter north of southeast corner and 0.2 meter above ground; brass bolt (U. S. Lake Survey P. B. M. 36)..... | 606. 104 |
| Milk River Point on Lake Shore Road, 1.5 miles south of, 33 meters S. 40° W. of southwest corner of Lake Side House, in front of residence of Victor Vernier; top of knob on top and near northwest side of large bowlder (U. S. Lake Survey P. B. M. 37)..... | 584. 681 |
| Lake St. Clair harbor line, on southeast corner of stone monument of, top of knob, marked "Harbor Line Reference Point C," on prolongation of south line of east-west road and on east side of north-south road at Milk River Point (U. S. Lake Survey P. B. M. 38) | 581. 091 |
| Milk River Point, 2.2 miles north of, 30 meters southeast of residence of Thomas Labodie, 3 meters south of property-line cross fence to west, on west side of Lake Shore road; spike in root of 18-inch maple tree (U. S. Lake Survey T. B. M. 106) | 579. 234 |

At Windmill Point Lighthouse.

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| Windmill Point Lighthouse, at head of Detroit River, on center of top of coping of concrete sea wall, 42 feet north of board walk to dock, nearly in line of a 10-inch maple tree and south side of lighthouse tower; highest point in square cut (U. S. Lake Survey B. M. Wall)..... | 579. 529 |
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HARBOR BEACH QUADRANGLE.

[Latitude 43° 45'–44°; longitude 82° 30'–82° 45'.]

At Sand Beach.

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| Sand Beach, 0.8 mile from custodian's office, at edge of bluff and nearly in line with north side of west pier, on granite bowlder; square in relief, marked "U. S. B. M." (U. S. Lake Survey B. M.)..... | 587. 814 |
| Sand Beach, at west end of U. S. boathouse in front of U. S. Engineers' office, in rock; iron rod (U. S. Lake Survey B. M. A)..... | 583. 560 |
| Sand Beach, just south of U. S. boathouse and near east end, in rock; top of mill shaft (U. S. Lake Survey B. M. B)..... | 583. 174 |
| Sand Beach, 0.2 mile from U. S. Engineers' office, 250 feet from outer end of dock, in rock under dock; top of bar (U. S. Lake Survey B. M. E)..... | 583. 207 |
| Sand Beach, on water table at southwest corner of J. Jenks & Co.'s brick store; marked (B. M. Jenks of Lake Survey)..... | 610. 559 |
| Sand Beach, 550 feet south of U. S. Engineers' office; square cut on bowlder (U. S. Lake Survey B. M. "Bowlder in Harbor")..... | 582. 677 |

HARVEY QUADRANGLE.

[Latitude 46° 15'–46° 30'; longitude 87° 15'–87° 30'.]

At Sands.

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| Sands, 74 meters east by 53 meters south of switch at north end of siding, in natural rock; copper bolt (U. S. Lake Survey B. M. 5, 1876)..... | 1, 202. 697 |
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HIGH ISLAND QUADRANGLE.

[Latitude 45° 30'–45° 45'; longitude 85° 30'–85° 45'.]

On Beaver Island.

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| Beaver Island, on northern end of, in north end of Lake Michigan, at Beaver Harbor lighthouse, on second stone step of short flight leading to door of light keeper's dwelling; top of square cut on west end (U. S. Lake Survey B. M. Lighthouse)..... | Feet. 588. 10 |
| Beaver Island, northern end of, in north end of Lake Michigan, at Beaver Harbor, in front of and across the road from Capt. Bonner's Hotel; nail in root of large oak tree (U. S. Lake Survey Gage B. M. Beaver Harbor)... | 586. 97 |

HOLLAND QUADRANGLE.

[Latitude 42° 45'–43°; longitude 86°–86° 15'.]

At Holland.

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| Holland, in yard of life-saving station, 2.2 feet north of south fence, 4.1 feet east of 8-inch poplar tree, 4 feet west of 11-inch poplar tree, 56.15 feet southwest of southeast corner of life-saving station, 2 inches below surface of ground and covered with two cast-iron washers; top of cap of vertical iron pipe..... | 586. 17 |
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MARINE CITY QUADRANGLE.

[Latitude 42° 30'–42° 45'; longitude 82° 15'–82° 30'.]

From Marine City to East China.

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| Marine City, 2.5 miles below Bell River bridge, 40 feet east of east road fence in William Cottrell's orchard, on base of southwest tree; spike and washer (U. S. Deep Wy. T. B. M. 67)..... | 582. 809 |
| Marine City, southeast corner of Water and Union streets, in Marine City Stave Co.'s store, near northwest corner, on stone base under window, 8 inches south of north end and 2.5 inches from front edge; brass bolt marked "U.S.P.B.M." (U. S. Deep Wy. P. B. M. 26)..... | 586. 456 |
| Marine City, on Backus Block, on north side of doorsill of bank of G. W. & F. T. Moore; marked by a cross (U. S. Deep Wy. Gage B. M. P.)..... | 586. 464 |
| Marine City, southeast corner of Washington and Water streets, in northwest corner of stone foundation of building occupied by the Globe office, 2 feet below sill of building and 6 inches above ground; marked by a square (U. S. Deep Wy. Gage B. M. O.)..... | 583. 138 |
| Marine City, northwest corner of Main and Broad streets, on city hall, near its southeast corner, at window entrance to corridor, 2 feet 5 inches above ground and 5 inches south of north jamb; brass bolt marked "U.S.P.B.M." (U. S. Deep Wy. P. B. M. 25)..... | 588. 158 |
| Marine City, in west face of city waterworks building, 5 inches north of southwest corner and 2.5 feet above ground; brass bolt (U. S. Deep Wy. P. B. M. 24)..... | 589. 848 |
| Marine City, at upper end of, on west side of Main Street, in front of Peter Francis's house, in base of 2-foot maple tree; spike with washer (U. S. Deep Wy. T. B. M. 62)..... | 584. 291 |
| Marine City, 1.2 miles above Broad Street, on east edge of road at top of river bank, opposite Charles Holland's house, in base of 1-foot poplar tree; spike with washer (U. S. Deep Wy. T. B. M. 61)..... | 583. 515 |
| Recor's Dock, on north side of road, 278 feet west of corner of fence where road turns abruptly toward the west, on base of maple tree 10 inches in diameter; spike with washer (U. S. Deep Wy. T. B. M. 59)..... | 583. 132 |

MARINETTE QUADRANGLE.

[Latitude 45°-45° 15'; longitude 87° 30'-87° 45'.]

At Menominee.

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| Menominee, at north end of Menekaunee bridge, in water table of Carpenter, Cook Co. wholesale grocery and office building, on north side of building, 46 inches east of northwest corner; copper bolt (U. S. Lake Survey B. M. CCC)..... | Feet. 589. 325 |
| Menominee, in masonry on downstream end of north pier of Menekaunee bridge, 23 inches north of south side of pier, 11.5 inches east of east side of bedplate; copper bolt (U. S. Lake Survey B. M. Bridge)..... | 590. 044 |

MARQUETTE QUADRANGLE.

[Latitude 46° 30'-46° 45'; longitude 87° 15'-87° 30'.]

At Marquette.

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| Marquette, in third course of masonry above water table on north side of Duluth, South Shore & Atlantic Ry. general freight and ticket office, 1 foot from northeast corner; copper bolt (U. S. Lake Survey B. M. 6, 1876)..... | 628. 414 |
| Marquette, on south side of new pump house of city waterworks, 10 inches from southwest corner, on water table (U. S. Lake Survey B. M. 11, 1896)..... | 620. 678 |

MONROE QUADRANGLE.

[Latitude 41° 45'-42°; longitude 83° 15'-83° 30'.]

From Monroe to Vienna station.

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| Monroe, on west end of south pier of Michigan Central R. R. bridge over Raisin River, on west face of pier, 6 inches north of its south edge and 4 feet above ground; brass bolt (U. S. Lake Survey P. B. M. C) (reported destroyed)..... | 581. 065 |
| Monroe, on south side of First Street, 345 feet west of Kentucky Avenue, on northwest corner of city fire-engine house, on northeast corner of pedestal stone just under brickwork; bottom surface of square cut (U. S. Lake Survey P. B. M. D)..... | 590. 770 |
| La Salle station, 1.5 miles below, on line of Lake Shore & Michigan Southern R. R., 115 meters below Lagerness road crossing, 3.38 meters east of east rail of track, on south side of open stone culvert, on top stone 3.5 feet above ground; square cut (U. S. Lake Survey P. B. M. E)..... | 582. 322 |
| Vienna station, on Michigan Central and Lake Shore & Michigan Southern railroads, 325 feet west of track, on north side of road to Erie (on section line east-west of section 16), about 20 rods west of center of section, on southwest corner of Mrs. William McLain's house, in east end of water table stone of south side of building, about 2.5 feet above ground; brass bolt (U. S. Lake Survey P. B. M. F)..... | 588. 828 |

From Monroe to Monroe Lighthouse.

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| Monroe, 12 inches south of bedplate of west truss, in top of and at southwest end of south pier of Michigan Central R. R. bridge over Raisin River; brass bolt marked "U.S.B.●M." (U. S. Lake Survey new P. B. M. M. C. R. R. bridge)..... | 584. 225 |
| Monroe Piers, in stone monument near end of pier to lighthouse and about 5 meters north of Raisin River; iron bolt (U. S. Lake Survey P. B. M. Monroe Piers)..... | 578. 654 |

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| Monroe Piers, at mouth of Raisin River, in cement foundation at southwest corner of lighthouse; brass bolt marked "U.S.●B.M." (U. S. Lake Survey P. B. M. Lighthouse)..... | Feet. 579.886 |
| Two-foot mark above gage zero..... | 574.682 |

MONTAGUE QUADRANGLE.

[Latitude 43° 15'–43° 30'; longitude 86° 15'–86° 30'.]

At White Lake.

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| White Lake, on line with north face of lighthouse, 10.6 feet east of northeast corner of lighthouse, 9.2 feet south of hard-maple tree, 11.28 feet north of hard-maple tree, 3 inches below surface of sod and covered with a 4 by ½ inch washer of iron; top of cap of vertical iron pipe..... | 598.630 |
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MOUNT CLEMENS QUADRANGLE.

[Latitude 42° 30'–42° 45'; longitude 82° 45'–83°.

From L'Anse Creuse to point near New Baltimore.

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| L'Anse Creuse station on the Detroit, Lake Shore & Mount Clemens R. R., on north buttress of tower of Catholic Church, 0.2 meter from corner, 0.3 meter above ground, in foundation stone; brass bolt (U. S. Lake Survey P. B. M. 39)..... | 581.029 |
| McSweeney's clubhouse, 3.8 miles southeast of, 20 meters east of Lake Shore road, 125 meters north of Erin schoolhouse (district 1), which is at motor-line station, Erin School; spike in root of 30-inch elm tree standing alone (U. S. Lake Survey T. B. M. 108)..... | 578.353 |
| Merten, motor-line station, 0.2 mile southwest of Maple Grove clubhouse, 30 meters south of vacant house, on west side of Lake Shore road; top of spike in root of 18-inch maple tree (U. S. Lake Survey T. B. M. 111)..... | 580.808 |
| McSweeney's clubhouse, 0.8 mile southwest of, 175 meters north of right-angled turn in road, 60 meters south of residence of Daniel Pornnyville, on west side of Lake Shore road; spike in root of 40-inch poplar tree (U. S. Lake Survey T. B. M. 112)..... | 580.813 |
| McSweeney's clubhouse, 200 meters west of, in hole drilled in sandstone of foundation at northwest corner of power house of Detroit, Lake Shore & Mount Clemens R. R., 5 centimeters above ground, 32 centimeters south of northwest corner, marked on stone "40 U. S."; brass bolt (U. S. Lake Survey P. B. M. 40)..... | 580.228 |
| McSweeney's clubhouse, 0.6 mile north of, 50 meters northeast of residence of William Kroll, 5 meters east of east road fence line, in pasture at turn in road; spike in root of 30-inch elm tree (U. S. Lake Survey T. B. M. 113)..... | 581.729 |
| Mount Clemens, 1 mile east of, on south bank of Clinton River, on west side of brick residence of J. Reimold, 0.9 meter above surface of ground, 0.7 meter north of bay window, in sandstone water table; brass bolt (U. S. Lake Survey P. B. M. 41)..... | 591.180 |
| J. Reimold's residence on Clinton River, 1 mile north of, on west side of Sugar Bush road, in west fence line, in root of 12-inch maple tree; top of spike (U. S. Lake Survey T. B. M. 117)..... | 583.592 |
| David Furnant, opposite residence of, 70 meters south of an angle in road to west, 2.2 miles north of town line, on east side of Sugar Bush road, in root of 24-inch cherry tree; spike (U. S. Lake Survey T. B. M. 124).... | 587.324 |
| New Baltimore, 3.2 miles west of, 60 meters south of angle in road, opposite residence of Mitchel Pelkey, on east fence line of Sugar Bush road, in root of 15-inch elm tree; spike (U. S. Lake Survey T. B. M. 126)..... | 587.938 |

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| New Baltimore, 2.5 miles west of, on top of south end of west abutment of 4-meter bridge over west branch of Salt River; top of knob on concrete (U. S. Lake Survey T. B. M. 127)..... | Feet. 579. 581 |
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MUNISING QUADRANGLE.

[Latitude 46° 15'–46° 30'; longitude 86° 30'–86° 45'.]

At Munising.

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| Munising, on south shore of Lake Superior; top of nut on tie rod extending through lower right-hand corner of east end of red brick boiler house which bears northwest about 100 meters from shore end of old Burtis dock (U. S. Lake Survey U. S. B. M. Munising)..... | 609. 85 |
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MUSKEGON QUADRANGLE.

[Latitude 43°–43° 15'; longitude 86°–86° 15'.]

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| Grand Haven, at corner of Washington and Water streets; on northwest corner of northwest corner stone of water table projecting from under brickwork above 1.75 inches on Water Street side and 1.5 inches on Washington Street side, the top being 8.5 inches above cement sidewalk... | 595. 940 |
| Muskegon, on middle of outside edge of sill of most easterly cellar window on north side of lighthouse and dwelling; scratched square 1 inch on each side..... | 589. 407 |

PICKFORD QUADRANGLE.

[Latitude 46°–46° 15'; longitude 84° 15'–84° 30'.]

From southeast corner of sec. 1, T. 43 N., R. 1 E., to Barbeau.

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| T. 43 N., R. 1 E., southeast corner of sec. 1, on east fence line of county road, 26 meters north of junction of roads at section corner, 38 meters south of southwest corner of Fairview schoolhouse, under cedar post with letters "U. S. B. M." on opposite sides, in top of dressed stone; half-inch bolt (U. S. Lake Survey P. B. M. Fairview)..... | 687. 247 |
| Sterlingville, 1 mile east by 0.2 mile south of, 40 meters east of east fence line of north-south road, 400 meters south of road intersection, 400 meters north of Robert Campbell's house, which stands on a high bluff 2 miles south of Big Munuscong River, in top of very large boulder marked "U. S." embedded in field belonging to Robert Campbell; brass bolt (U. S. Lake Survey P. B. M. Campbell)..... | 627. 811 |
| Kelden, 4 meters east of east fence line of north-south road, 91 meters north of north end of large barn on east side of road, 440 meters south of center of wagon bridge over Little Munuscong River, 950 meters north of Big Munuscong River, 420 meters south of post office, under post with "U. S. B. M." cut on sides, in top of cut stone; iron bolt (U. S. Lake Survey P. B. M. Munuscong)..... | 601. 506 |

At Hessel.

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| Hessel, on north shore of Straits of Mackinac, 15 feet south of first house from lake on north-south road, 30 meters south of northwest corner of street intersection, 36 meters north of triangulation station Hessel; top of knob on top of granite boulder (U. S. Lake Survey B. M. Hessel).... | 581. 79 |
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PORT HURON QUADRANGLE.

[Latitude 42° 45'–43°; longitude 82° 15'–82° 30'.]

From East China to point near Port Huron.

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| East China, 0.5 mile above Ricors dock on river front, in foundation on south side of Rankin's house, between kitchen and cellar door, 26 inches east of east kitchen door jamb, 7.75 inches below weatherboard and 18 inches above ground; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 23)..... | Feet. 590. 842 |
| East China, opposite schoolhouse, on river bank, in base of large lone oak tree; spike with washer (U. S. Deep Wy. T. B. M. 57)..... | 593. 137 |
| St. Clair, in south end of, on west side of Front Street opposite Oakland Hotel, just south of row of cottages, in base of 3-foot oak tree; spike with washer (U. S. Deep Wy. T. B. M. 54)..... | 608. 334 |
| St. Clair, in lower part of town, on river front at John Schlinkert's coal yard, in brick wall of old storehouse, 7.25 inches north of southeast corner, 4.1 feet above ground, in twenty-first course of brick below woodwork of gable; brass bolt (U. S. Deep Wy. P. B. M. 22)..... | 599. 677 |
| St. Clair, on south side of Adam Street, on north side of Barron Building, which is used as post office, on stone sill of east window in basement, 1 foot west of east edge of sill; marked by a square (U. S. Deep Wy. Gage B. M. N)..... | 583. 828 |
| St. Clair, at foot of Adam Street, southwest corner of Schwabins Brothers' saloon, on corner of water table; marked by square (U. S. Deep Wy. Gage B. M. M)..... | 588. 758 |
| St. Clair, at city waterworks, 5 feet 7.5 inches south of south end of door-stone at main entrance, in water table; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 21)..... | 588. 808 |
| St. Clair, on top of north sill, on west side of Front Street, in foundation of Mark Hopkins's residence, in east face, in second stone south of the northeast corner, top course of masonry; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 20)..... | 627. 299 |
| St. Clair, on top of hill above center of town, on west side of Front Street just east of sidewalk, on second maple tree, 2 feet in diameter, north of Mark Hopkins's north fence; spike and washer (U. S. Deep Wy. T. B. M. 53)..... | 623. 293 |
| St. Clair, 1.2 miles above, on east side of River Street near river bank, opposite Hotel Summerville, in base of 3-foot lone elm tree; spike and washer (U. S. Deep Wy. T. B. M. 52)..... | 610. 259 |
| St. Clair, 3 miles above, just above oak grove, on east side of river road where it turns from river below little bridge, on south bank of gully in base of 2-foot oak tree; spike and washer (U. S. Deep Wy. T. B. M. 49)..... | 606. 220 |
| Marysville, 1 mile below, on west side of river road, 3 feet west of road fence, at Mr. Carlton's house, on seventh locust tree from upper end of row; spike with washer (U. S. Deep Wy. T. B. M. 47)..... | 593. 852 |
| Marysville, on lower one of three tall chimneys, shingle mill chimney, on top of the northwest corner of stone foundation, 1 foot below surface of ground; highest point in square (U. S. Deep Wy. Gage B. M. L.)..... | 582. 760 |
| Marysville, diagonally opposite Marysville Hotel, in foundation of N. B. Mill's store, in second brick northeast from corner and in seventh course above stone foundation; brass bolt (U. S. Deep Wy. P. B. M. 19)..... | 590. 012 |

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| Marysville, at upper mill (Sanburn sawmill), on chimney bearing stone marked 1871 in west end, south face, in corner brick, seventeenth course above foundation; brass bolt (U. S. Deep Wy. P. B. M. 18)..... | Feet. 587. 164 |
| Marysville, 0.8 mile above. 195 feet north of small bridge over gully, 130 feet above square frame house, in base of large oak tree having stones piled around it; spike with wa-her (U. S. Deep Wy. T. B. M. 46)..... | 593. 222 |
| Black River, 2.8 miles below the Hamilton place, on west side of river road, 250 feet below house; highest point of hydrant (U. S. Deep Wy. Gage B. M. J) | 596. 387 |
| Port Huron, 2 miles below Black River, at Alverson and Dunford's dry dock, in south face of boiler house of pumping station, in top course of stone foundation, 10 inches west from west face of coal door and 6 inches below top of stone; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 17)..... | 596. 726 |
| Port Huron, 1.4 miles below Black River, 1,840 feet below viaduct over Pere Marquette R. R., west side of Military Street, in front of No. 2409, 12 feet north of horse block, on curb; highest point inside of square (U. S. Deep Wy. T. B. M. 41)..... | 603. 536 |
| Port Huron, 0.8 mile below Black River, west side of Military Street, in front of No. 1915, south side of carriage walk to street, on curb; highest point inside of square (U. S. Deep Wy. T. B. M. 40)..... | 605. 702 |
| Port Huron, at foot of Clyde Street, 100 feet from river, on brick powder house; top of lower hinge bolt (U. S. Deep Wy. Gage B. M. I)..... | 585. 361 |
| Port Huron, 290 feet south of Black River, west side of Military Street, on Opera House block, center post of front entrance, on extreme southeast corner of iron plate; surface inside of 1-inch square (U. S. Deep Wy. P. B. M. 16)..... | 595. 265 |
| Port Huron, on courthouse, on stone doorstep of northeast basement door, 4.5 inches south of south jamb and 3.25 inches from front edge; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 15) | 599. 421 |
| Port Huron, at city waterworks, south end of coal shed, 66 feet south of south face of main building; on coping stone of south retaining wall, 6 inches from its south face and 6 inches from its east end, at which point south wall of coal shed rises vertically 3 feet to upper coping; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 14)..... | 600. 143 |

At Port Huron.

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| Port Huron, 0.3 mile below Fort Gratiot Lighthouse, 1,300 feet north of old customhouse at Fort Gratiot, at south end of east fence of Block I car shops, at north end of horizontal timber firmly attached to top of retaining wall; top of square headed iron bolt (U. S. Lake Survey Gage B. M. Section Gorge)..... | 584. 560 |
| Port Huron, on top of foundation wall on east side of U. S. Customhouse (formerly Grand Trunk Ry. passenger station) (building is about 300 feet south of State Street and 150 feet from bank of St. Clair River), 3.54 feet from southeast corner; top of highest point in rectangle on top of stone (U. S. Lake Survey B. M. Customs)..... | 589. 767 |
| Port Huron, on bank of St. Clair River, in Pine Grove Park, on south side of lower floor of main building of Port Huron pumping station; top of southeast corner of cut stone sill of window (U. S. Lake Survey B. M. WW) | 589. 771 |
| Port Huron, 450 feet north of mouth of Black River, on south wall of old dry dock, 40 feet from river face of burned dock, at north end of dock of Jenks Lumber Co., on east end of east top stone of short stone wall; highest point inside of square cut on stone, marked "U.S.B.M." (U. S. Lake Survey Gage B. M. MBR)..... | 583. 3 |

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| Port Huron, 2 miles below mouth of Black River, at dry dock of Reid Wrecking Co., in south face of boiler house, 1.5 feet above surface of ground, 1.5 feet from east end of wall, 29.1 feet east of P. B. M. 17; brass bolt, marked "U.S.B.M." (U. S. Lake Survey B. M. 17A)..... | Feet. 589. 706 |
| Port Huron, 2.5 miles below mouth of Black River, 25 feet north of Grant Place, 35 feet north of discharge section dry dock, on fence line on west side of river road; spike in root of 10-inch hickory tree (U. S. Lake Survey B. M. Hickory)..... | 594. 472 |
| Port Huron, 2.5 miles below mouth of Black River, 2,000 feet below Dry Dock of Reid Wrecking Co., at foot of Grant Place, on east side of river road, at edge of bank, on line of discharge section dry dock; top of half-inch gas pipe embedded in concrete monument (U. S. Lake Survey B. M. Δ North West)..... | 592. 576 |

RABER QUADRANGLE.

[Latitude 46°-46° 15'; longitude 84°-84° 15'.]

From Gatesville to southeast corner sec. 1, T. 43 N., R. 1. E.

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| Gatesville, in small ditch west of wagon road running north from Gatesville post office, 5 meters east of north-south fence on west side of road, 133 meters north of intersection of roads at Gatesville, 1,435 meters south of P. B. M. Gatesville; small square cut on highest point of embedded limestone boulder (U. S. Lake Survey T. B. M. 173)..... | 738. 371 |
| Raber, on south line of main street, 65 meters west of water's edge of St. Marys River, 76 meters east of intersection of narrow-gage railroad and the main street, 75 meters from entrance of a new church, 37 meters from southwest corner of Mud Lake Lumber Co.'s general store, under cedar post with letters "U.S.B.M." cut on opposite sides, in top of cut stone; iron bolt (U. S. Lake Survey P. B. M. Raber)..... | 582. 443 |
| Gatesville, 1 mile north of, north side of county road, 7 feet west of large hemlock stump at corner of road, under 6-inch cedar post marked "U. S. B. M." on opposite sides, in top of cut stone; iron bolt (U. S. Lake Survey P. B. M. Gatesville)..... | 717. 495 |
| T. 43 N., R. 2 E., southeast corner of sec. 27, 13 meters northwest of section, corner stake, 3 meters south of east-west fence which is south line of Frank Huber's property, 150 meters east of point in road opposite Huber's house, 125 meters north of creek crossing road in bottom of large ravine 1 mile north of county road, under cedar post with letters "U.S.B.M." cut on opposite sides, in top of cut stone marked "U.S."; iron bolt (U. S. Lake Survey P. B. M. Hudson)..... | 680. 232 |
| P. B. M. Hudson, 12.5 meters west of, 5.5 meters south of fence on north side of east-west road, 21 meters west and 4 meters north of section corner stake, 140 meters east of point on road opposite Frank Huber's house, 125 meters north of creek which crosses road at bottom of large ravine; summit of small square on highest point of embedded granite boulder marked "U.□S." (U. S. Lake Survey T. B. M. 164)..... | 683. 488 |
| T. 43 N., R. 2 E., northeast corner of sec. 21, on east side of road at turn by the bluff, 12.5 meters south of section corner, under cedar post with letters "U.S.B.M." cut on opposite sides, in top of cut stone; iron bolt (U. S. Lake Survey P. B. M. Tripp)..... | 680. 806 |

ROCK QUADRANGLE.

[Latitude 46°-46° 15'; longitude 87°-87° 15'.]

At Maple Ridge.

| | |
|---|-------------------|
| Maple Ridge, on east side of Chicago & North Western Ry., 36 meters north of switch of siding leading to charcoal kilns, in natural rock; copper bolt (U. S. Lake Survey B. M. 4, 1876) | Feet. 959. 219 |
|---|-------------------|

SAGINAW QUADRANGLE.

[Latitude 43° 15'-43° 30'; longitude 83° 45'-84°.]

Along the Saginaw River.

The following bench marks were established by primary leveling of the U. S. Corps of Engineers; a single line of levels verified by subsequent lines of wye leveling.

| | |
|--|-------------------|
| Carrolton, at extreme west end of the 6th Street bridge, in north end of cross stringer; top of drift bolt (U. S. C. E. B. M.)..... | Feet. 591. 828 |
| Saginaw, in cement walk, at head of stairs on south side of east approach of the Genesee Street bridge, circular copper plate (U. S. C. E. B. M.).. | 598. 889 |
| Saginaw, at northeast corner of Rust and Fordney streets, in tee on top of 8-inch iron pipe protruding about 3 feet out of ground; top of square nut (U. S. C. E. B. M.)..... | 594. 622 |
| Saginaw River; all gages along this river are set so that zero of each is at 579.0 feet above mean tide at New York. There is a gage located on each bridge or approach, also one at the Northern Chemical Works slip, one on Bairds boathouse at Zilwaukee, and one at the WaterWorks intake. | |

ST. IGNACE QUADRANGLE.

[Latitude 45° 45'-46°; longitude 84° 30'-84° 45'.]

At Mackinaw City.

| | |
|--|----------|
| Mackinaw City, in rough stone face of first course of masonry on north side of Old Point Mackinaw lighthouse, 1.5 feet above ground and 2 feet west of center of slot window facing water, the letter B is cut above the east end of shelf; cut (U. S. Lake Survey B. M. 1)..... | 590. 917 |
| Mackinaw City, top of edge of stone forming sill of door in light keeper's house that is nearest the light-house tower, the bench mark is at easterly side of door, on level part of stone, next to bevel of sill and at middle of 8-foot stone, the west half of which forms the doorsill (U. S. Lake Survey B. M. 2) | 593. 155 |
| Mackinaw City, just north of railroad crossing on Huron Avenue, 13.3 feet north of north rail of most northerly track of Michigan Central R. R., 6.9 feet south of south rail of Grand Rapids & Indiana Ry., 6.4 feet east of lamp-post between above-named tracks, 2.6 feet west of west edge of plank sidewalk on west side of Huron Avenue, in top of block of concrete marked "U. S. 19 0 01 B. M."; brass tube (U. S. Lake Survey B. M. 3). | 586. 944 |
| Mackinaw City, 44.8 feet north of B. M. 3, 184.1 feet west of northwest corner of pump house, measurement made in line with north face of pump house, which is on east side of Huron Avenue, on west side of Huron Avenue near west street line; top of railroad rail set vertically in ground and projecting 1 foot out of ground (U. S. Lake Survey B. M. R.)..... | 589. 940 |

| | |
|--|------------------|
| Mackinaw City, 64.7 feet east of b. m. R, 85.4 feet northeast of b. m. 3, 119.4 feet west of northwest corner of pump house, on east side of Huron Avenue, measured in line with north face of pump house, in concrete block marked "U. S. 19 0 01 B. M."; brass tube (U. S. Lake Survey B. M. 4)..... | Feet. 584.139 |
|--|------------------|

SAULT STE. MARIE QUADRANGLE.

[Latitude 46° 15'–46° 30'; longitude 84° 15'–84° 30'.]

From Barbeau to point near Brimley.

| | |
|---|---------|
| Barbeau, 1 meter north of south fence of east-west road, 59 meters west of 8-inch lone oak tree standing in road, 31 meters east of point in road opposite east line of small schoolhouse standing north of road, on top of hill and in front of Alexander Scales's house, 330 meters east of post office, which stands at southeast corner of junction of roads, under cedar post with "U.S.B.M." marks on sides, in top of dressed stone; iron bolt (U. S. Lake Survey P. B. M. Barbeau)..... | 660.881 |
| Charlotte River, near mouth of, on north side of road which runs east-west just south of Charlotte River, 3 meters north of center of road and in line with west side of Mr. Dyer's house on north side of road, 9 meters west of west line of James Greg's house on south side of road, 55 meters west of Greg schoolhouse, 500 meters west of center of Hay Lake road; summit of small square cut on top of large sandstone boulder (U. S. Lake Survey T. B. M. 133)..... | 621.931 |
| Charlotte River, near mouth of, at Hay Lake road crossing, 3 feet east of Hay Lake road, 140 feet south of Charlotte River; referenced as follows: 4 by 4 inch stone marked "U. S." on top is S. 64° W. and 59 feet distant; B. M. 3½ is N. 50° W. and 126 feet distant; northeast corner of house on east side of road is S. 01° 10' E.; under cedar post with letters U.S.B.M. on sides, in top of cut stone; iron bolt (U. S. Lake Survey P. B. M. Charlotte)..... | 602.190 |
| Charlotte River, near mouth of, 5 meters south of bank of Charlotte River and just below wagon bridge over same; spike in east root of double elm tree (U. S. Lake Survey P. B. M. 3½)..... | 600.951 |
| NOTE.—The wood has rotted around spike but it appeared to be solid when connected with in August, 1901. | |
| Charlotte River, near mouth of, 5 meters south of bank of river, just below wagon bridge over river on Hay Lake road, on opposite side of tree from b. m. 3½; wire nail in west root of 3-foot double elm tree (U. S. Lake Survey T. B. M. 132)..... | 600.344 |
| Charlotte River, 3 miles north of, at junction of Hay Lake and Rosedale roads, 2 feet east by 1 foot south of fence corner which is southwest corner of property of Mrs. John Hinds (the property on south of Rosedale road and east of Hay Lake road belongs to Van Leven and is 10.5 miles south of Soo locks, 0.8 mile west of St. Marys River, and 3 miles due north of Charlotte River), under small boulder, in sandstone boulder buried with its flat top 2.5 feet below surface of ground; brass bolt (U. S. Lake Survey P. B. M. Hinds)..... | 592.194 |
| "Soo" locks on Hay Lake road, 7 miles below, on right bank of St. Marys River, in south end of an ash grove belonging to Mrs. Newcomb, 10 meters from top of bank, 5 meters south of south fence line of lane leading from house to river, 3 meters south of line of north side of large barn, under pine post, in top of boulder; iron bolt (U. S. Lake Survey P. B. M. Newcomb)..... | 584.789 |

| | |
|--|---------|
| Riverside Cemetery, 4.5 miles below the "Soo" locks, in center of sixth masonry house above ground at south end of gateway to cemetery, stone is marked "T. S. P. B. M." base bolt: U. S. Lake Survey P. B. M. River- | Feet. |
| side..... | 590.120 |
| Riverside Cemetery, 1143 meters below entrance to, 8 meters inside of fence, on river side of Hay Lake Road and in line with east fence of road running south from this point, wire nail in south root of 24-foot elm tree | |
| U. S. Lake Survey T. B. M. 123..... | 589.562 |
| Sault Ste. Marie, 4 miles below, 5 meters north of center of Hay Lake Road, 37 meters below junction of road leading to Chippewa County poorhouse; wire nail in southwest foot of 10-inch spruce tree (U. S. Lake Survey | |
| T. B. M. 121..... | 590.529 |
| Sault Ste. Marie, 2.5 miles below "Soo" locks at, on upper island, 10 meters back of Government light on right shore of main channel of St. Marys River, square iron bolt in top of sandstone boulder (U. S. Lake Survey | |
| P. B. M. 140)..... | 586.265 |
| Sault Ste. Marie, 2.5 miles below "Soo" locks at, 8 meters east of center of wagon road along St. Marys River, 17 meters south of path leading toward the river and to north bridge crossing slough to small island, 51 meters west of west bank of slough, 165 meters above boathouse of Country Club, 247 meters below triangulation East Base (Soo base line), in top of boulder, square iron bolt (U. S. Lake Survey P. B. M. 14)..... | 586.304 |
| Sault Ste. Marie, northeast corner of Chippewa County courthouse, 2.5 feet above ground and 4 inches west of northeast corner of building, in north side of red sandstone base bolt: U. S. Lake Survey P. B. M. Soo)..... | 619.7 |
| Sault Ste. Marie, at northeast corner of Chippewa County courthouse, 6 inches above ground, 5 inches west of northeast corner of building, 2.15 feet directly below p. b. m. "Soo" summit of small square on top of first stone above ground (U. S. Lake Survey T. B. M. 117)..... | 617- |
| Sault Ste. Marie, on north side of Weitzel lock, 10 inches south of north edge of masonry and directly in line of lower gate at upper end of Weitzel Lock, 150 meters west of Government building; summit of square cut on top of masonry (U. S. Lake Survey P. B. M. A)..... | 606- |
| Sault Ste. Marie, at foot and on north side of Poe lock, 5 inches south of south side of steps leading down on north side of Poe lock and directly in line with front edge of second step from bottom; summit of square on top of masonry (U. S. Lake Survey P. B. M. B)..... | 588- |
| Sault Ste. Marie, on south side of Sault Ste. Marie Canal at movable dam, on southwest corner of masonry, 6 inches from south side and 8 inches from west side, 115 meters east of railroad and 900 meters west of west end of Weitzel lock; summit of small square cut on top of masonry (U. S. Lake Survey T. B. M. 90)..... | 600- |
| Sault Ste. Marie, in line of center of Meridian Street (Meridian Street bounds Fort Brady on the west, 4 feet east and 12 feet north of southeast corner of stone abutment of plate girder bridge carrying Soo Line over wagon road, 2 feet below the surface of ground, in hole walled up and covered with large stones; summit of square head of an iron bolt leaded in top of stone monument marking intersection of the principal meridian and south line of Sault Ste. Marie grant (U. S. Lake Survey P. B. M. Meridian)... | 600- |

| | |
|---|-------------------|
| Sault Ste. Marie, 2.5 miles above, 5 meters north of Minneapolis, St. Paul & Sault Ste. Marie Ry., 21 meters south of Duluth, South Shore & Atlantic Ry., 1,800 meters west of prominent point of bluff near North Western Leather Co.'s buildings on north side of railroads, 250 meters east of prominent point of bluff on south side of tracks, at which point the two railroads separate, in top of very large boulder marked "U. S."; summit of small square (U. S. Lake Survey T. B. M. 94)..... | Feet. 640. 117 |
| Sault Ste. Marie, in small ditch in small cut of Soo Line, 1.95 meters south of south rail of track, 35 meters west of road crossing, 63 meters east of point of curve of track, 185 meters east of smoke stack of North Western Leather Co.'s tannery, in top of large sandstone boulder marked "U. S."; brass bolt (U. S. Lake Survey P. B. M. Neaseville)..... | 641. 715 |
| Brush Point, St. Marys River, in Solomon's clearing, 3 feet below surface of ground, 3.5 meters west of 15-inch white-pine tree, on which is blazed a 9-inch triangle, 16 meters south of top of river bank on line of an old fence running back from river, 925 meters by shore line below Brush Point, under 15 by 6 by 6 inch stone marked "U. S."; in top of sandstone 15 by 12 by 6 inches; brass bolt (U. S. Lake Survey P. B. M. Solomon)..... | 608. 339 |
| Brush Point, 5 meters back of staff gage and 35 meters west of northwest corner of large boathouse on south shore of St. Marys River; five wire spikes in top of very large hub on top of low bank (U. S. Lake Survey P. B. M. Brush)..... | 603. 719 |
| Duluth, South Shore & Atlantic Ry., 200 meters north of 3-mile post, 12 feet west of center line of track, in summit of large boulder, marked on east face "U.S.B.M."; copper bolt (U. S. Lake Survey P. B. M. 1)..... | 642. 092 |
| Duluth, South Shore & Atlantic Ry., 29 feet north of 6-mile post, in summit of boulder buried to depth of 4 feet, 41 feet west of center of track, a red sandstone is set directly over underground mark; copper bolt (U. S. Lake Survey P. B. M. 2)..... | 641. 357 |

At Sault Ste. Marie.

| | |
|--|----------|
| Sault Ste. Marie, near center of downstream end of second pier from U. S. shore of the International Bridge across St. Marys River; flat surface 2 inches square on top of fifth course of masonry from top of pier, 6 feet below top of battered surface of pier and 1 foot north of center line, marked "U.S.B.M." (U. S. Lake Survey B. M. Pier 2)..... | 609. 393 |
| Sault Ste. Marie, at end of east railing of Bingham Avenue Bridge across canal of Michigan Lake Superior Power Co., on north side of canal; top of northwest bolt in footplate of post (U. S. Lake Survey B. M. Bingham Avenue Bridge)..... | 613. 940 |

SOUTH FOX ISLAND QUADRANGLE.

[Latitude 45° 15'–45° 30'; longitude 85° 45'–86°.]

On South Fox Island.

| | |
|--|---------|
| South Fox Island, on south end of, in north end of Lake Michigan, at southeast corner of square lighthouse tower; top of water table (U. S. Lake Survey B. M. Lighthouse)..... | 612. 10 |
|--|---------|

SOUTH MANITOU QUADRANGLE.

[Latitude 45°–45° 15'; longitude 86°–86° 15'.]

On South Manitou Island.

| | |
|---|---------|
| South Manitou Island, on east side of, in north end of Lake Michigan, between two stones in beveled water table forming the top of foundation of South Manitou lighthouse, just at right of door leading into tower; highest point on head of brass screw (U. S. Lake Survey B. M. Lighthouse)..... | 598. 07 |
|---|---------|

WHISKEY ISLAND QUADRANGLE.

[Latitude 45° 45'–46°; longitude 85° 30'–85° 45'.]

On Squaw Island.

| | |
|--|------------------|
| Squaw Island, in north end of Lake Michigan; top of level sill of north basement window of light keeper's dwelling, not marked (U. S. Lake Survey B. M. Lighthouse)..... | Feet. 590. 68 |
|--|------------------|

SOUTH HAVEN QUADRANGLE.

[Latitude 42° 15'–42° 30'; longitude 86° 15'–86° 30'.]

At South Haven.

| | |
|--|----------|
| South Haven, under southwest corner of Liberty Hall, at northeast corner of Michigan Avenue and Maple Street, tenth course above course under W. & S. cellar window frames; top of brick foundation..... | 623. 091 |
| South Haven, near northeast corner of water works pump house, on north end of stone window sill..... | 591. 096 |

WYANDOTTE QUADRANGLE.

[Latitude 42°–42° 15'; longitude 83°–83° 15'.]

From Gibraltar to Monroe.

| | |
|---|----------|
| South Rockwood, 17 feet west of center of Michigan Central R. R. track, 198 feet south of station, on southeast stone pillar of water tank on northeast corner of stone; bottom of square cut (U. S. Lake Survey P. B. M. A). | 587. 336 |
| Newport, on line of Michigan Central R. R. track, 360 feet above station, in south abutment of bridge over Swan Creek, in end of north face, 3 feet above ground; brass bolt (U. S. Lake Survey P. B. M. B)..... | 580. 399 |

From Trenton to Amherstburg, Canada.

| | |
|--|----------|
| Trenton, southeast corner of Washington Avenue and St. Joseph Street, in northwest corner of Commercial Hotel, in west face, in first course below water table, second stone from corner; copper bolt (U. S. Lake Survey P. B. M. Trenton, 1877)..... | 603. 496 |
| Trenton, 1 mile below, on northwest corner of east pier inside of truss of Michigan Central R. R. bridge across Detroit River to Grosse Isle, Mich., and Stony Island, Mich., marked "U.S. □ B.M."; square cut (U. S. Lake Survey P. B. M. Bridge) | 584. 556 |
| Grosse Isle, on coping stone on north end of west course of west pier of Michigan Central Railroad bridge connecting Grosse Isle with Stony Island, marked "U.S. □ B.M."; square cut (U. S. Lake Survey P. B. M. Grosse Isle) | 584. 561 |
| Stony Island, about 75 meters north of Michigan Central R. R. track and 15 meters from water's edge, in stone monument, about 3 feet above ground; iron bolt (U. S. Lake Survey P. B. M. Monument)..... | 577. 524 |

From Gibraltar to Tecumseh salt works.

| | |
|---|----------|
| Gibraltar, in foundation wall of lighthouse tower (now abandoned and used as a dwelling), at its southeast corner, east face, in fourth course of masonry below cut sandstone water table; copper bolt (U. S. Lake Survey B. M. Gibraltar)..... | 582. 528 |
| Gibraltar, on same lighthouse as above (now used as a dwelling), on southeast corner of stone sill of door in southeast angle of building; right angle cut on stone (U. S. Lake Survey P. B. M. No. 2)..... | 585. 045 |

| | Feet. |
|--|----------|
| Gibraltar, in southern part of town, on lake front, in rear of Edward Hall's wharf and boat house, 75 feet southwest of his house, in east face of stone milk house 8 inches south from northeast corner, 4 feet 4 inches above ground; brass bolt (U. S. Deep Wy. P. B. M. 1)..... | 587. 610 |
| Trenton, 2 miles below, on west side of road south at north side of Riverside stock farm, 7 feet east of west fence, on lower and well-embedded boulder; highest point in square (U. S. Deep Wy. T. B. M. 4)..... | 576. 608 |
| Trenton, southeast corner of Washington Avenue and St. Joseph Street, in west face of Commercial Hotel, second stone from northwest corner, in first course below water table; copper bolt (U. S. Lake Survey B. M. "Trenton")..... | 603. 496 |
| Trenton, northwest corner of St. Joseph Street and Washington Avenue, in stone base of store building belonging to Joseph Anderson, 5 feet 4 inches north of north side of door, 4.75 inches south of north pillar, 4 inches back from face; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 2)..... | 601. 706 |
| Sibley's stone quarry (crushing plant), 2,525 feet above, on north side of Mud Street, 354 feet west of center of south road, in foundation of F. B. Sibley's residence, in first course below baseboard and 1.5 feet above ground, 18.9 feet south of northeast corner; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 3)..... | 593. 460 |
| Wyandotte, lower part of, northwest corner of Forest Street and Biddle Avenue, at east line of west sidewalk on top rim (immovable) of hydrant, on the letter "n" of the word "open" (U. S. Deep Wy. T. B. M. 11)..... | 583. 779 |
| Wyandotte, in southern part of, on river bank, 6 feet south of line fence between the Morton Salt Co. and Detroit Dry Dock Co., 40 feet west of face of dock, on top of hard-wood post 5 by 6 inches cross section, 6 inches above ground; top of 20-penny spike (U. S. Deep Wy. gage B. M. A.)..... | 578. 086 |
| Wyandotte, on river front, 42 feet south of line fence between Morton Salt Co. and Detroit Dry Dock Co., in snubbing post; large cut spike (U. S. Deep Wy. gage B. M. B.)..... | 579. 246 |
| Wyandotte, on northwest corner of Biddle Avenue and Elm Street, south side of main entrance to corner store, southeast corner of pedestal stone of pillar; square on corner of stone (U. S. Deep Wy. T. B. M. 12)..... | 586. 208 |
| Wyandotte, on west side of Biddle Avenue, 171 feet south of south side of Oak Street, in south pedestal stone of south pillar of brick store used as meat market, owned by J. P. Debo, 8.5 inches east of face of building and 4.5 inches north of north face of pillar; brass bolt marked "U. S. P. B. M." (U. S. Deep Wy. P. B. M. 4)..... | 585. 737 |
| Wyandotte, 2,700 feet west of Biddle Avenue, on south side of Oak Street, in Union School building, north side of foundation, in third course of masonry below water table, inclosed by fire escape wire screw; copper bolt marked "U. S. P. B. M." (U. S. Lake Survey P. B. M. Wyandotte)..... | 586. 383 |
| Ecorse, on east side of river road, at foot of Labodie Street, on W. B. Smith's residence, in east face of foundation, 10.5 inches from southeast corner, in seventh course of brick below baseboard; brass bolt (U. S. Deep Wy. P. B. M. 5)..... | 584. 779 |
| Ecorse, opposite head of Fighting Island, at Tecumseh salt works, 136 feet east of northeast corner of boiler room, on river front at end of railroad track, 11 feet west of bumper, 4.5 feet north of north rail on top of 10-inch pile, 14 inches above ground; top of 20-penny wire spike circumscribed by 2-inch square cut in wood (U. S. Deep Wy. P. B. M. 6) .. | 578. 673 |

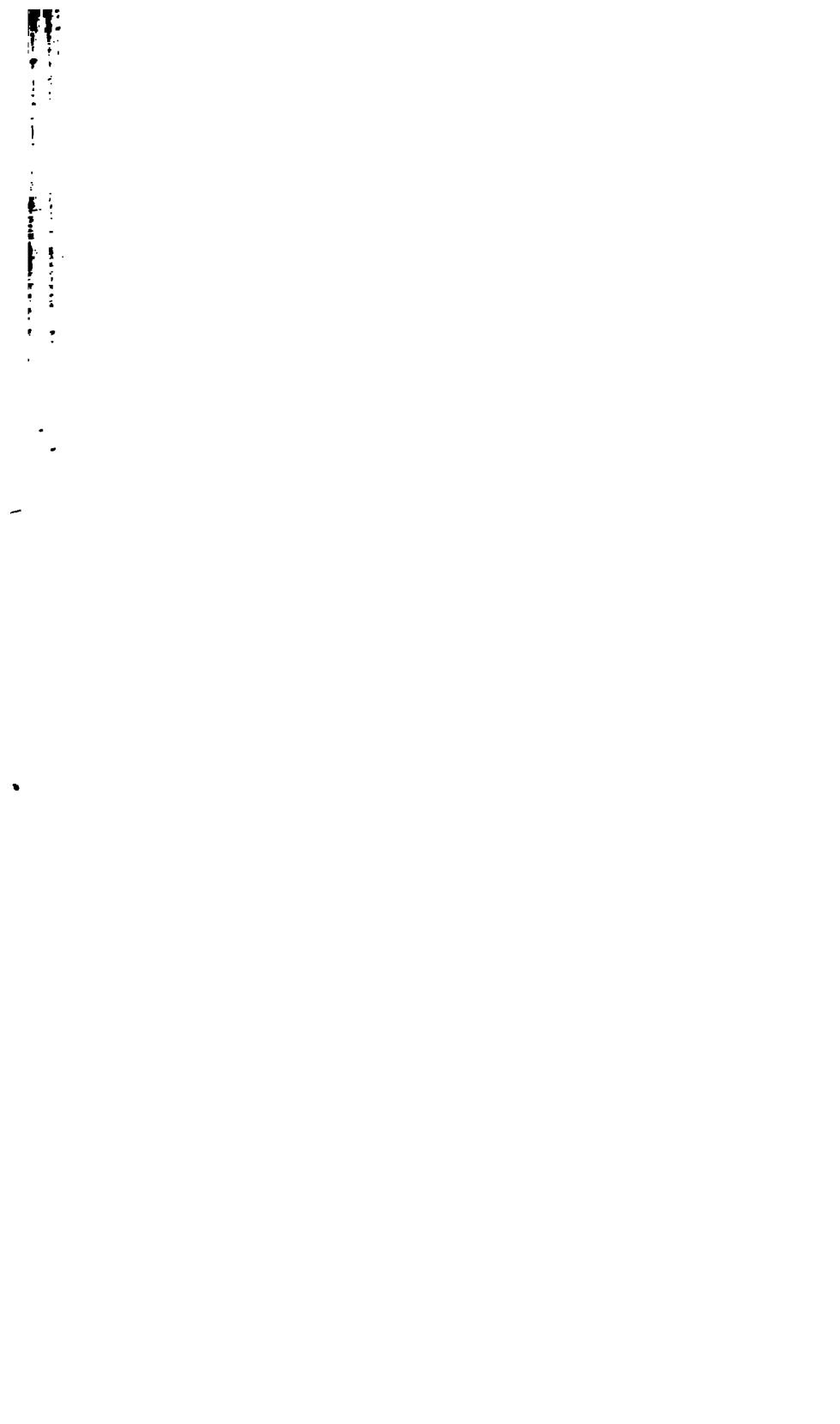
APPENDIX B.

SECONDARY ELEVATIONS.

Secondary elevations from records and topographic maps of the United States Geological Survey, including altitudes of well-known summits, water-surface elevations of prominent lakes, and other useful elevations are given below. These elevations are approximate and should not be used for accurate work.

| Place. | Quadrangle. | County. | Elevation. |
|--|---------------------|---------------------------|------------|
| Angelus Lake, water surface..... | Pontiac..... | Oakland..... | 80 |
| Annie Lake, water surface..... | Calumet..... | Houghton..... | 97 |
| Bald Mountain..... | Rochester..... | Oakland..... | 1,00 |
| Base Line Lake, water surface..... | Dexter..... | Livingston-Washtenaw..... | 92 |
| Bass Lake, water surface..... | do..... | Livingston..... | 90 |
| Beach Lake, water surface..... | Milford..... | do..... | 90 |
| Bear Lake, water surface..... | Calumet..... | Houghton..... | 95 |
| Big Lake, water surface..... | Milford..... | Oakland..... | 1,07 |
| Boston Pond, water surface..... | Calumet..... | Houghton..... | 1,07 |
| Brophy Lake, water surface..... | Howell..... | Livingston..... | 95 |
| Buckhorn Lakes, water surface..... | Milford..... | Oakland..... | 92 |
| Cass Lake, water surface..... | Pontiac..... | do..... | 91 |
| Cedar Island Lake, water surface..... | do..... | do..... | 94 |
| Cemetery Lake, water surface..... | do..... | do..... | 90 |
| Columbia Lake, water surface..... | Saline..... | Washtenaw..... | 97 |
| Commerce Lake, water surface..... | Pontiac..... | Oakland..... | 95 |
| Cooley Lake, water surface..... | do..... | do..... | 95 |
| Crescent Lake, water surface..... | do..... | do..... | 94 |
| Crooked Lake, water surface..... | Howell..... | Livingston..... | 90 |
| Deer Lake, water surface..... | Pontiac..... | Oakland..... | 90 |
| Delhi Mills..... | Dexter..... | Washtenaw..... | 94 |
| Detroit River, water surface..... | Wyandotte..... | Wayne..... | 55 |
| do..... | Detroit..... | do..... | 1,04 |
| Duck Lake, water surface..... | Milford..... | Oakland..... | 1,04 |
| Dunham Lake, water surface..... | do..... | Livingston-Oakland..... | 90 |
| Earl Lake, water surface..... | Howell..... | Livingston..... | 1,00 |
| Fish Lake, water surface..... | Milford..... | Oakland..... | 95 |
| Fourmile Lake, water surface..... | Dexter..... | Washtenaw..... | 1,01 |
| Grass Lake, water surface..... | Milford..... | Oakland..... | 97 |
| Greenock Lake, water surface..... | South Lyon..... | Livingston..... | 95 |
| Greens Lake, water surface..... | Pontiac..... | Oakland..... | 94 |
| Hamburg Lake, water surface..... | Dexter..... | Livingston..... | 63 |
| Hawlett..... | Detroit..... | Wayne..... | 1,22 |
| Hogback Mountain, triangulation station..... | Marquette..... | Marquette..... | 98 |
| Horseshoe Lake, water surface..... | Dexter..... | Washtenaw..... | 90 |
| Inchwagh Lake, water surface..... | South Lyon..... | Livingston..... | 90 |
| Independence Lake, water surface..... | Dexter..... | Washtenaw..... | 90 |
| Island Lake, water surface..... | Pontiac..... | Oakland..... | 90 |
| Isle Royal..... | Passage Island..... | Isle Royal..... | 90 |
| Judah Lake, water surface..... | Pontiac..... | Oakland..... | 90 |
| Kearsarge..... | Calumet..... | Houghton..... | 90 |
| Kellogg Lake, water surface..... | Milford..... | Oakland..... | 90 |
| Kent Lake, water surface..... | do..... | do..... | 90 |
| Long Lake, water surface..... | Howell..... | Livingston..... | 90 |
| do..... | Milford..... | Oakland..... | 90 |

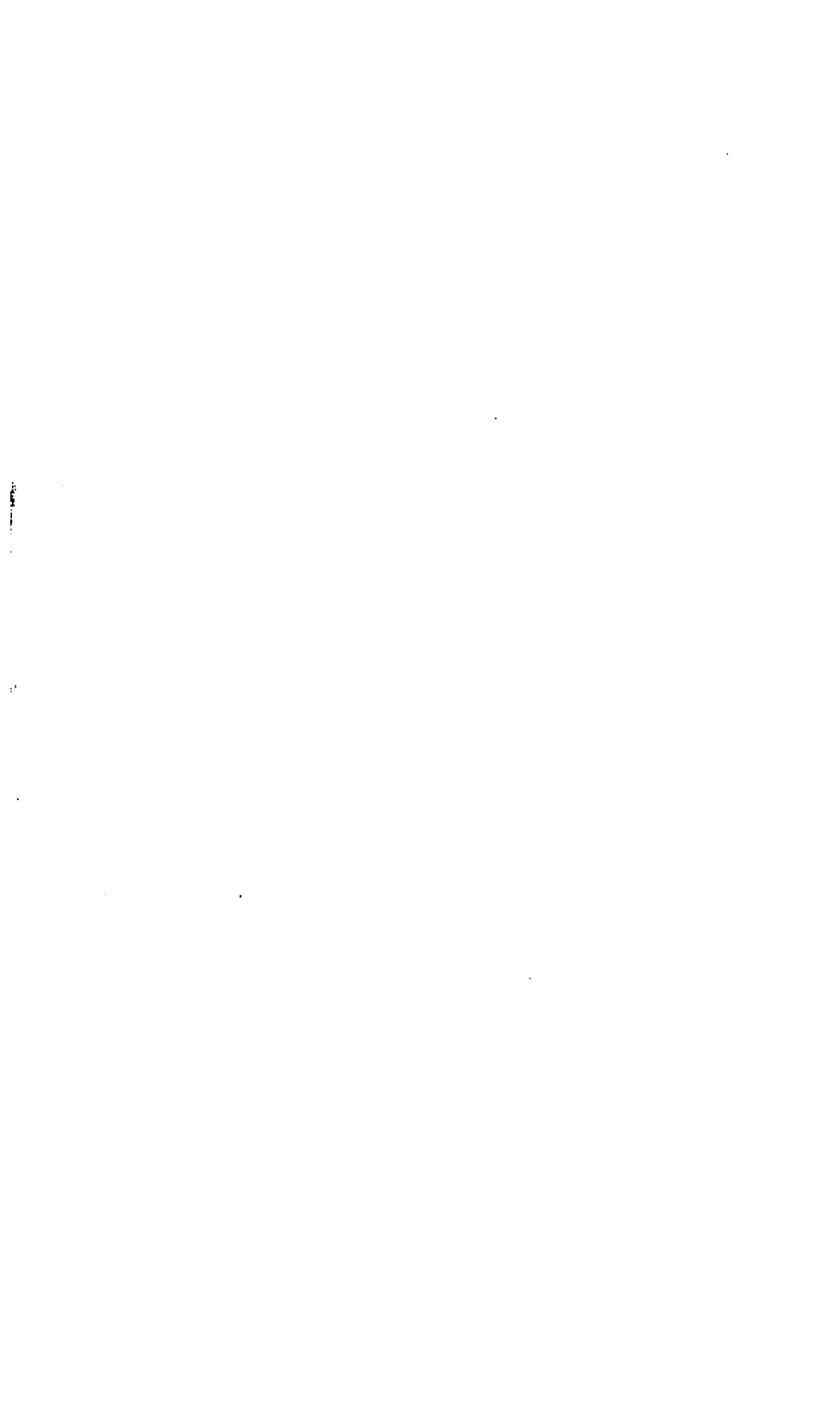
| Place. | Quadrangle. | County. | Elevation. <i>Feet.</i> |
|--|-------------|----------------------|----------------------------|
| Loom Lake, water surface..... | Pontiac | Oakland | 949 |
| Lord Lake, water surface..... | do | do | 921 |
| Lower Long Lake, water surface..... | do | do | 912 |
| Lower Pettibone Lake, water surface..... | do | do | 955 |
| Lower Straits Lake, water surface..... | do | do | 930 |
| Mesnard Mountain, triangulation station..... | Marquette | Marquette | 1,123 |
| Middle Straits Lake, water surface..... | Pontiac | Oakland | 932 |
| Novi..... | Wayne | do | 912 |
| Orchard Lake, water surface..... | Oakland | Pontiac | 932 |
| Ore Lake, water surface..... | Dexter | Livingston | 856 |
| Oxbow Lake, water surface..... | Pontiac | Oakland | 942 |
| Parshallville..... | Howell | Livingston | 908 |
| Pickered Lake, water surface..... | Marquette | Marquette | 918 |
| Pinckney..... | Dexter | Livingston | 904 |
| Pine Lake, water surface..... | Pontiac | Oakland | 932 |
| Pleasant Lake, water surface..... | Howell | Livingston | 947 |
| Do..... | Saline | Washtenaw | 953 |
| Pond Lake, water surface..... | Pontiac | Oakland | 957 |
| Portage Lake, water surface..... | Dexter | Livingston-Washtenaw | 851 |
| Royal Oak..... | Detroit | Oakland | 657 |
| St. Clair Lake, water surface..... | Grossepoint | Macomb-Wayne | 576 |
| Salem..... | South Lyon | Oakland | 936 |
| Silver Lake, water surface..... | Dexter | Washtenaw | 873 |
| South Lyon..... | South Lyon | Oakland | 940 |
| Square Lake, water surface..... | Pontiac | do | 933 |
| State Sanitarium..... | Howell | Livingston | 1,086 |
| Strawberry Lake, water surface..... | Dexter | do | 853 |
| Sugarloaf Mountain..... | Marquette | Marquette | 1,079 |
| Superior Lake, water surface..... | Calumet | Houghton-Keweenaw | 602 |
| Sylvan Lake, water surface..... | Pontiac | Oakland | 930 |
| Tecumseh..... | Saline | Sewanee | 813 |
| Thompson Lake, water surface..... | Howell | Livingston | 905 |
| Torch Lake, water surface..... | Calumet | Houghton | 603 |
| Union Lake, water surface..... | Pontiac | Oakland | 928 |
| Upper Long Lake, water surface..... | do | do | 914 |
| Upper Pettibone Lake, water surface..... | Milford | do | 998 |
| Upper Straits Lake, water surface..... | Pontiac | do | 933 |
| Voorheis Lake, water surface..... | do | do | 983 |
| Walled Lake, water surface..... | do | do | 934 |
| Walnut Lake, water surface..... | do | do | 881 |
| Waterford Hill..... | do | do | 1,149 |
| Watkins Lake, water surface..... | do | do | 951 |
| White Lake, water surface..... | Milford | do | 1,016 |
| Whitmore Lake, water surface..... | Dexter | Livingston-Washtenaw | 894 |
| Williams Lake, water surface..... | Pontiac | Oakland | 969 |
| Winans Lake, water surface..... | Dexter | Livingston | 858 |
| Woodhull Lake, water surface..... | Pontiac | Oakland | 957 |
| Woodruff Lake, water surface..... | Milford | do | 1,015 |
| Zukey Lake, water surface..... | Dexter | Livingston | 883 |



INDEX.

| A. | | Page. | | | Page. |
|--|--|----------------|---|--|-------------------|
| Ada..... | | 16, 23 | Clinite, R. G., work of..... | | 26 |
| Adrian quadrangle..... | | 11-12 | Coast and Geodetic Survey, elevations by... | | 47-73 |
| Alger County..... | | 47 | Coldwater quadrangle..... | | 31-32 |
| Algonac..... | | 48, 49, 50 | Constantine..... | | 29, 31 |
| Algonac quadrangle..... | | 47-51 | Cooper..... | | 32, 33 |
| Alicia..... | | 41, 43 | Cooperation by the State..... | | 5 |
| Allegan County..... | | 25, 47 | Copper Harbor..... | | 54 |
| Alpena..... | | 51 | Copper Harbor quadrangle..... | | 54 |
| Alpena County..... | | 47 | Copper Range R. R..... | | 7, 8, 45, 46 |
| Alpena quadrangle..... | | 51 | Corinth..... | | 19, 20 |
| Alvordton quadrangle..... | | 12 | Corps of Engineers, U. S. Army, elevations by | | 47-73 |
| Anchorville..... | | 48 | Corunna quadrangle..... | | 38-39 |
| Atlantic..... | | 8 | Crosswell quadrangle..... | | 54 |
| B. | | | D. | | |
| Bancroft..... | | 39 | Datum, inland..... | | 6-7 |
| Barbeau..... | | 64, 69 | Delray..... | | 56 |
| Barry County..... | | 15 | Delta County..... | | 47 |
| Bay City..... | | 51, 52 | Detour..... | | 53, 54, 55 |
| Bay City quadrangle..... | | 51-52 | Detour quadrangle..... | | 54-55 |
| Bay County..... | | 47 | Detroit..... | | 55, 56, 57, 59 |
| Bay Mills..... | | 52 | Detroit & Lima Northern R. R..... | | 56 |
| Bay Mills quadrangle..... | | 52-53 | Detroit, Lake Shore & Mount Clemens R. R.. | | 63 |
| Beaver Island..... | | 61 | Detroit quadrangle..... | | 55-57 |
| Bench marks, description of..... | | 5-6 | Drenthe..... | | 22 |
| forms of, plate showing..... | | 5 | Duluth, South Shore & Atlantic Ry.. | | 8, 10, 52, 62, 71 |
| Benton Harbor quadrangle..... | | 53 | E. | | |
| Berrien County..... | | 47 | East China..... | | 61, 65 |
| Bibbee, E. C., work of..... | | 15, 25, 37 | East Gilead..... | | 32 |
| Board on Deep Waterways, elevations by.... | | 47-73 | Easton County..... | | 15 |
| Bradley..... | | 36, 37 | Ecorse..... | | 73 |
| Branch County..... | | 25 | Edon quadrangle..... | | 12-13 |
| Brimley..... | | 52, 69 | Elm River..... | | 10 |
| Brush Point..... | | 71 | Escanaba..... | | 57 |
| Burnt Island quadrangle..... | | 53 | Escanaba quadrangle..... | | 57 |
| Byron Center..... | | 19 | F. | | |
| C. | | | Fabius..... | | 28, 29 |
| Caledonia..... | | 19, 20, 23 | Fair Haven..... | | 48 |
| Canden..... | | 12, 13, 14, 34 | Faleston..... | | 11 |
| Carlton..... | | 21 | Fawn River..... | | 35, 36 |
| Carrolton..... | | 68 | Fennville quadrangle..... | | 57 |
| Cascade..... | | 16 | Fergus..... | | 43, 44 |
| Centerville..... | | 26, 27, 28, 29 | Fisher..... | | 17, 18, 20 |
| Centerville quadrangle..... | | 25-31 | Flitman, Phillip, work of..... | | 11 |
| Charlotte River..... | | 69 | Flowerfield..... | | 35 |
| Chassell..... | | 45 | Fort Gratiot..... | | 57, 58 |
| Chesaning quadrangle..... | | 37-38 | Fort Wayne..... | | 56 |
| Chicago & North Western Ry..... | | 57, 68 | Fowlerville quadrangle..... | | 40 |
| Chicago, Milwaukee & St. Paul Ry..... | | 9, 10 | Freeport..... | | 24 |
| Chief quadrangle..... | | 53 | French, C. R., work of..... | | 11 |
| Chippewa County..... | | 47 | Frontier..... | | 14 |
| Clark, Howard, work of..... | | 44 | Frost Junction..... | | 9 |
| Classification, standard of..... | | 5 | | | |

| O. | Page. | | Page. |
|----------------------------------|------------|---|------------|
| Obenhoff..... | 46 | Schoolcraft..... | 34 |
| Onakama..... | 53 | Schoolcraft quadrangle..... | 34-35 |
| Ontonagon County..... | 7 | Sea level, mean, definition of..... | 6 |
| Oskar..... | 45 | Seager..... | 11 |
| Ottawa Beach..... | 21 | Secondary elevations..... | 74-75 |
| Ottawa County..... | 15, 47 | Senecal..... | 11 |
| | | Shelbyville..... | 37 |
| P. | | Shiawassee County..... | 37 |
| Painesdale..... | 45 | Sidnaw..... | 10 |
| Parmelee..... | 23 | Sidnaw quadrangle..... | 10 |
| Paynesville quadrangle..... | 9 | South Fox Island quadrangle..... | 71 |
| Peppard..... | 8 | South Haven quadrangle..... | 72 |
| Pere Marquette R. R..... | 56 | South Manitou quadrangle..... | 71 |
| Personnel, recbrd of..... | 5 | South Range..... | 46 |
| Pickford quadrangle..... | 64 | South Rockwood..... | 72 |
| Pioneer..... | 13 | South Saginaw..... | 40 |
| Pioneer quadrangle..... | 13-14 | Squaw Island..... | 72 |
| Pipe Island..... | 55 | Sterlingville..... | 64 |
| Plainwell..... | 32 | Stony Island..... | 72 |
| Plato..... | 9 | Sturgis..... | 35 |
| Port Austin..... | 59 | Sturgis quadrangle..... | 35-36 |
| Port Huron..... | 57, 66, 67 | Sunfield..... | 21, 24 |
| Port Huron quadrangle..... | 65-67 | Swan Creek..... | 41, 42, 43 |
| Portage..... | 34 | Swanton quadrangle..... | 14-15 |
| Precise leveling..... | 7-11 | | |
| Presque Isle County..... | 47 | T. | |
| Primary leveling..... | 11-46 | Three Rivers..... | 25, 26, 28 |
| Publication, previous..... | 5 | Toivola..... | 9, 10 |
| | | Townsend, L. D., work of..... | 15 |
| R. | | Trenton..... | 72, 73 |
| Raber..... | 67 | Trimountain..... | 46 |
| Raber quadrangle..... | 67 | Twin Lakes..... | 11 |
| Ransom..... | 12, 13, 14 | | |
| Reading quadrangle..... | 33-34 | U. | |
| Redridge..... | 46 | United States Lake Survey, elevations by..... | 47-73 |
| Ricedale..... | 9 | | |
| Ridgeville..... | 11, 14, 15 | V. | |
| Roberts Landing..... | 48, 49 | Vienna..... | 62 |
| Rock quadrangle..... | 68 | | |
| Rubicon..... | 9 | W. | |
| Rubicon quadrangle..... | 9-10 | Waldron..... | 12, 13 |
| | | Wauseon quadrangle..... | 15 |
| S. | | Wayland..... | 36 |
| Saginaw..... | 40, 68 | Wayland quadrangle..... | 36-37 |
| Saginaw County..... | 37 | Wayne County..... | 47 |
| Saginaw quadrangle..... | 40-41, 68 | Wentworth..... | 17 |
| St. Charles quadrangle..... | 41-44 | West Saginaw..... | 41 |
| St. Clair..... | 65 | Weston..... | 12 |
| St. Clair County..... | 47 | Whiskey Island quadrangle..... | 72 |
| St. Helena Island..... | 59 | White Lake..... | 63 |
| St. Ignace quadrangle..... | 68-69 | White Pigeon..... | 30 |
| St. Joseph..... | 53 | Windmill Point..... | 59, 60 |
| St. Joseph County..... | 25 | Winona..... | 11 |
| Salmon Trout..... | 46 | Winona quadrangle..... | 10-11 |
| Sand Beach..... | 60 | Woodbury..... | 22 |
| Sands..... | 60 | Wyandotte..... | 73 |
| Sanilac County..... | 47 | Wyandotte quadrangle..... | 72-73 |
| Saugatuck..... | 57 | | |
| Sault Ste. Marie..... | 70, 71 | Z. | |
| Sault Ste. Marie quadrangle..... | 69-71 | Zilwaukee..... | 52 |
| Schlesser..... | 53 | | |



DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

BULLETIN 560

RESULTS OF SPIRIT LEVELING IN MINNESOTA

1897 TO 1914, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER

WORK DONE IN COOPERATION WITH THE STATE OF MINNESOTA FROM
1909 TO 1914, INCLUSIVE; GEORGE A. RALPH, CHIEF ENGINEER
OF STATE DRAINAGE COMMISSION



WASHINGTON
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1915



CONTENTS.

| | Page. |
|---|-------|
| Introduction..... | 5 |
| Cooperation..... | 5 |
| Previous publication | 5 |
| Personnel..... | 5 |
| Classification..... | 5 |
| Bench marks..... | 6 |
| Datum..... | 6 |
| Topographic maps..... | 7 |
| Precise leveling..... | 7 |
| Badger, Baudette, Birchdale, Clementson, Crookston, Fertile, Goos, Greenbush, Indus, International Falls, Middle River, Pelland, Red Lake Falls, Rosevelt, Roseau, Thief River Falls, Warroad, and Williams quadrangles (Beltrami, Itasca, Marshall, Polk, Red Lake, and Roseau counties)..... | 7 |
| Primary leveling..... | 14 |
| Bagley, Bemidji, Buena Vista, E, Esplee, Foy, Garland, Germantown, Grit, Jelle, Lindford, Liner, Malcolm, Middle River, Nebish, Pencer, Quiring, Rollis, Solway, Thief River Falls, Winsor, and Winterroad quadrangles (Beltrami, Clearwater, Marshall, Polk, Red Lake, and Roseau counties)..... | 14 |
| Ashby, Barnesville, Barrett, Battle Lake, Chokio, Detroit Lake, Fergus Falls, Herman, Morris, Pelican Rapids, Perham, Rothsay, Underwood, Vergas, and Wendell quadrangles (Grant, Otter Tail, and Stevens counties)..... | 21 |
| Anoka and White Bear quadrangles (Anoka, Hennepin, and Ramsey counties)..... | 49 |
| Minnetonka and Mayer quadrangles (Carver and Hennepin counties)..... | 50 |
| Elk River and Rockford quadrangles (Hennepin and Wright counties).... | 52 |
| Center City and St. Croix Dalles quadrangles (Chisago County)..... | 54 |
| Wahpeton quadrangle (Wilkin County)..... | 55 |
| Aitkin, Brainerd, Cross Lake, Cuyuna, Deerwood, McGregor, Seavey, and Wealthwood quadrangles (Aitkin and Crow Wing counties)..... | 55 |
| Duluth and Superior quadrangles (St. Louis County)..... | 77 |
| Appendix A: Elevations adjusted by the Coast and Geodetic Survey from precise leveling..... | 79 |
| Appendix B: Elevations of stone-line bench marks established by the Mississippi River Commission..... | 153 |
| Appendix C: Secondary elevations..... | 182 |
| Index..... | 185 |

ILLUSTRATION.

| | Page. |
|---|-------|
| PLATE I. Geological Survey bench marks..... | 5 |





GEOLOGICAL SURVEY BENCH MARKS.

A, Tablet used in cooperation with the U. S. Geological Survey at the
B and *D*, Copper ten penny nails used in setting of a nail and copper washer
C, *E*, and *F*, The stationing of the bench marks.
F, Iron post used where there is a hole.

RESULTS OF SPIRIT LEVELING IN MINNESOTA, 1897 TO 1914, INCLUSIVE.

R. B. MARSHALL, *Chief Geographer.*

INTRODUCTION.

Cooperation.—The State of Minnesota contributed financially to the work of 1909 to 1914, inclusive.

Previous publication.—All results of spirit leveling in Minnesota previously published by the United States Geological Survey and all the results of later work in the State are included in this report, rearranged by quadrangles. All elevations are based on the precise-level net adjustment of 1912 by the United States Coast and Geodetic Survey to a common mean sea level datum. The part of this net which lies within or along the borders of Minnesota comprises the line along Mississippi River from the southeast corner of the State to Lake Itasca, the line from Brainerd via Aitkin and Grand Rapids to Cass Lake, the line of the Corps of Engineers, United States Army, from St. Paul to Duluth, also the following lines by the Coast and Geodetic Survey: St. Cloud via Evansville and Childs to Ortonville, and Evansville via Fergus Falls and Crookston to Stephen.

Personnel.—The field work previous to 1903 was done under the general direction of J. H. Renshawe, geographer; that for 1903 to 1906, inclusive, under H. M. Wilson, geographer; and the later work under W. H. Herron, geographer, under the general direction of R. B. Marshall, chief geographer. Credit is given to the respective levelmen in the introductions to the several lists. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, under the general direction of E. M. Douglas, geographer.

Classification.—The elevations are classified as precise or primary, according to the methods employed in their determination. For precise-level lines instruments and rods of the highest grade are used, each line is run in both forward and backward directions, and every precaution is taken to guard against error. The allowable divergence between the forward and the backward lines in feet is represented by the formula $0.017 \sqrt{D}$, in which D is the distance in miles between

bench marks. For primary lines standard Y levels are used; lines are run in circuits or are closed on precise lines, with an allowable closing error in feet represented by $0.05 \sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given to the work to maintain this standard. For levels of both classes careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (C and E , Pl. I), $3\frac{1}{2}$ inches in diameter and one-fourth inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (F , Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post $3\frac{1}{2}$ inches in outer diameter and 4 feet in length. It is split at the bottom and expanded to a width of 10 inches in order to give a firm bearing on the earth, and is set about 3 feet in the ground. A bronze or aluminum-bronze cap is riveted upon the top of the post. A third style of bench mark with abbreviated lettering (B and D , Pl. I), is used for unimportant points. This consists of a special copper nail, $1\frac{1}{2}$ inches in length, driven through a copper washer seven-eighths of an inch in diameter.

The tablets as well as the caps on the iron posts are appropriately lettered, and for cooperating States the fact of such cooperation is indicated by the addition of the State name (at G , Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot, as determined by the levelman. These numbers are stamped with $\frac{1}{8}$ -inch steel dies on the tablets or post caps, to the left of the word "feet." The office adjustment of the notes and the reduction to mean sea level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of tides and winds were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions,

such as long narrow bays, rivers, and like features will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea levels determined from observations in the Atlantic Ocean, the Gulf of Mexico, or the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "Datum" on tablets or posts. For such areas corrections of published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

There are included herewith the results of leveling in certain wet, overflowed, or swampy lands, ceded by the Chippewa Indians, in the counties of Beltrami, Itasca, Marshall, Polk, Red Lake, and Roseau, the Survey of which was specifically provided for by Congress June 21, 1906, and finally reported upon in House Document 27, Sixty-first Congress, first session. The elevations of bench marks given in that document have been corrected to agree with the adjustment of precise leveling made in 1912.

Topographic maps.—Maps of the following quadrangles, wholly or partly in Minnesota, have been published by the United States Geological Survey up to April 15, 1914. They may be obtained for 10 cents each, or \$3 for 50, on application to the Director of the Survey at Washington, D. C.

| | |
|------------------------|--------------------------------|
| Anoka. | Minneapolis. |
| Ashby. | Minnetonka. |
| Barrett. | Morris. |
| Battle Lake. | Rockford. |
| Chokio. | St. Croix Dalles (Wis.-Minn.). |
| Duluth. | St. Paul. |
| Fargo (N. Dak.-Minn.). | Wahpeton (N. Dak.-Minn.). |
| Fergus Falls. | Wendell. |
| Herman. | White Bear. |

PRECISE LEVELING.

Badger, Baudette, Birchdale, Clementson, Crookston, Fertile, Goos, Greenbush, Indus, International Falls, Middle River, Pelland, Red Lake Falls, Roosevelt, Roseau, Thief River Falls, Warroad, and Williams quadrangles.

BELTRAMI, ITASCA, MARSHALL, POLK, RED LAKE, AND ROSEAU COUNTIES.

The elevations in the following list are the result of a line of precise levels run by C. H. Semper in 1906 from Crookston to Middle River, and extended in 1907 by E. L. McNair from Middle River

northward along the Great Northern Railway to Greenbush; thence along highways via Badger and Roseau to Warroad, a small town on the Canadian Northern Railway at the southwestern extremity of the Lake of the Woods and only about 7 miles south of the forty-ninth parallel; thence eastward along the Canadian Northern Railway to Baudette, on Rainy River; thence along the south bank of Rainy River—the line being cut through the forest a considerable part of the distance—to International Falls, opposite the older Canadian town of Fort Francis. Elevations are based on the bench mark "City" of the Coast and Geodetic Survey at Crookston, which is taken as 867.731 feet above mean sea level.

CROOKSTON QUADRANGLE.

[Latitude, $47^{\circ} 45' - 48^{\circ}$; longitude, $96^{\circ} 37' - 96^{\circ} 45'$.]

From Crookston along Great Northern Ry. via Tilden Junction and Thief River Falls to Middle River (part of line).

| | |
|--|---------|
| Crookston, Polk County, "City" bench mark, at entrance of Merchants' National Bank building, on northwest corner of Second and Main streets; a square outline on north side of top of first step (C. & G. S. b. m.)..... | 867.731 |
| Crookston, 3.38 miles east of, at railroad crossing, southeast corner of fence; iron post stamped "888" | 886.962 |
| Crookston, 6.27 miles east of, south side of track, at railroad crossing, corner of fence; iron post stamped "905" | 904.113 |

FERTILE QUADRANGLE.

[Latitude, $47^{\circ} 39' - 47^{\circ} 45'$; longitude, $96^{\circ} 15' - 96^{\circ} 30'$.]

From Crookston along Great Northern Ry. via Tilden Junction and Thief River Falls to Middle River (part of line).

| | |
|---|-----------|
| Burwell, 1.82 miles east of, 50 feet south of track, 60 feet west of road, in corner of fence; iron post stamped "927" | 925.944 |
| Burwell, 4.63 miles east of, north side of track, 8 feet east of milepost 11; iron post stamped "991" | 989.658 |
| Burwell, 7.31 miles east of, 60 feet north of railroad, 50 feet west of road; near crossing; iron post stamped "1035" | 1,034.250 |
| Burwell, 10.43 miles east of, south side of track, second telegraph pole west of milepost 17; iron post stamped "1103" | 1,101.552 |
| Tilden Junction, 2.02 miles north of, east side of track, opposite milepost 59, at fence line; iron post stamped "1095" | 1,093.522 |

RED LAKE FALLS QUADRANGLE.

[Latitude, $47^{\circ} 45' - 48^{\circ}$; longitude, $96^{\circ} 15' - 96^{\circ} 30'$.]

From Crookston along Great Northern Ry. via Tilden Junction and Thief River Falls to Middle River (part of line).

| | |
|--|-------|
| Delorme, 0.57 mile north of, railroad crossing, 30 feet west of track, 3 feet north of crossing signboard, 389 feet south of milepost 63; iron post stamped "1092" | 1,090 |
| Perault, 0.34 mile north of, railroad crossing, east side of track, 358 feet south of milepost 65; iron post stamped "1043" | 1,041 |
| Perault, 3.13 miles north of, west side of track, 30 feet north of switch to Red Lake Falls, on east margin of highway; iron post stamped "1035" | 1,033 |

| | |
|---|-------------------|
| Red Lake Falls, 1.07 miles north of, between main line track and switch to Red Lake Falls Milling Co., 25 feet east of main track, Great Northern Ry.; iron post stamped "984"..... | Feet. 983. 124 |
| Red Lake Falls, 4.31 miles north of, west side of track, 8 feet northwest of milepost 5; iron post stamped "1071"..... | 1, 069. 941 |
| Red Lake Falls, 7.26 miles north of, east side of track, 150 feet east of milepost 2; iron post stamped "1086"..... | 1, 084. 491 |

THIEF RIVER FALLS QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 96°-96° 15'.]

From Crookston along Great Northern Ry. via Tilden Junction and Thief River Falls to Middle River (part of line).

| | |
|--|-------------|
| St. Hilaire, 362 feet north of station, road crossing, 30 feet west of track; iron post stamped "1091"..... | 1, 089. 584 |
| St. Hilaire, 2.59 miles north of, railroad crossing, west of track, at northwest corner of fence; iron post stamped "1102"..... | 1, 101. 060 |
| St. Hilaire, 5.63 miles north of, northeast corner of road crossing, at fence corner; iron post stamped "1124"..... | 1, 122. 556 |
| Thief River Falls, First National Bank building, west face, between windows; aluminum tablet stamped "1137"..... | 1, 136. 129 |
| Thief River Falls, 3.58 miles north of, road crossing, 100 feet east of track, at southwest corner of fence; iron post stamped "1133"..... | 1, 131. 393 |
| Thief River Falls, 6.38 miles north of, west side of track, 3 feet north of milepost 35; iron post stamped "1139"..... | 1, 137. 538 |
| Steiner, 2.46 miles north of, west side of track, 5 feet north of milepost 38; iron post stamped "1152"..... | 1, 151. 221 |

MIDDLE RIVER QUADRANGLE.

[Latitude, 48° 15'-48° 30'; longitude, 96°-96° 15'.]

From Crookston along Great Northern Ry. via Tilden Junction and Thief River Falls to Middle River (part of line).

| | |
|--|-------------|
| Sandridge, 287 feet north of station, west side of track, 30 feet south of water tank; iron post stamped "1157"..... | 1, 155. 317 |
| Sandridge, 3.02 miles north of, west side of track, 15 feet west of milepost 44; iron post stamped "1144"..... | 1, 143. 057 |
| Sandridge, 5.95 miles north of, northwest side of track, 20 feet northwest of milepost 47; iron post stamped "1143"..... | 1, 142. 202 |
| Middle River, 0.75 mile south of, 6 feet west of milepost 50; iron post stamped "1147"..... | 1, 146. 129 |

From Middle River along Great Northern Ry. to Greenbush (part of line).

| | |
|---|-------------|
| Middle River, 2.1 miles north of, 200 feet north of milepost 63, 60 feet east of track; iron post stamped "1169"..... | 1, 167. 561 |
|---|-------------|

GREENBUSH QUADRANGLE.

[Latitude, 48° 30'-48° 45'; longitude, 96°-96° 15'.]

From Middle River along Great Northern Ry. to Greenbush (part of line).

| | |
|---|-------------|
| Strathcona, 1.2 miles south of, 360 feet north of milepost 58, 45 feet east of track, at edge of right of way; iron post stamped "1139"..... | 1, 137. 772 |
| Strathcona, 96 feet west of center of track, 18 feet north of center of wagon road, 9 feet west of ditch; iron post stamped "1126"..... | 1, 125. 059 |
| Strathcona, 0.75 mile north of, 50 feet west of center of track, 35 feet northwest of milepost 60, at edge of right of way; iron post stamped "1120"..... | 1, 118. 411 |

| | |
|--|-------------------|
| Strathcona, 3.8 miles north of, opposite milepost 63, 45 feet east of track, at edge of right of way; iron post stamped "1099"..... | Feet 1,097.788 |
| Greenbush, 3.6 miles south of, opposite milepost 66, 45 feet west of track; iron post stamped "1071"..... | 1,069.816 |
| Greenbush, 0.5 mile south of, 45 feet west of track, 15 feet northwest of second telegraph pole north of milepost 69; iron post stamped "1073".... | 1,071.526 |

From Greenbush along highway via Badger, Roseau, and Pequis to Warroad (part of line).

| | |
|--|-----------|
| Greenbush, 1.2 miles north of, on main highway, 30 feet east of road, 45 feet west of railroad grade, 6 feet north of telephone pole; iron post stamped "1075"..... | 1,074.024 |
| Greenbush, 3.6 miles northeast of, 90 feet northeast of schoolhouse, T. 161 N., R. 42 W., about at corner of secs. 29, 30, 31, and 32, 20 feet west of road; iron post stamped "1080"..... | 1,078.665 |
| Greenbush, 6.4 miles northeast of, 4 feet north of third telephone pole north of house, 21 feet west of road; iron post stamped "1086"..... | 1,084.356 |

BADGER QUADRANGLE.

[Latitude, 48° 45'-49°; longitude, 96°-96° 15'.]

Near Badger.

| | |
|---|-----------|
| Badger Creek; water surface June 27, 1907 | 1,064.4 |
| Badger, 375 feet northwest of church, 186 feet northeast of Badger Feed and Sale Stable, 6 feet east of sidewalk, at corner of fence; iron post stamped "1084"..... | 1,082.600 |

ROSEAU QUADRANGLE.

[Latitude, 48° 45'-49°; longitude, 95° 45'-96°.]

From Greenbush along highway via Badger, Roseau, and Pequis to Warroad (part of line).

| | |
|--|-----------|
| Badger, 3.2 miles northeast of, 42 feet north of fence corner, 12 feet east of center of main road, 170 feet north of house owned by Mr. Anderson, in NE. $\frac{1}{4}$ sec. 32 T. W.; iron post stamped "1086"..... | 1,084.632 |
| Fox, 20 feet west of north-south section line between secs. 26 and 27, 135 feet south of corner of secs. 22, 23, 26, and 27, T. 162 N., R. 41 W.; iron post stamped "1092"..... | 1,091.137 |
| Fox, 3.8 miles east of, 24 feet west of center of road, at fence corner, NE. $\frac{1}{4}$ sec. 20, T. 162 N., R. 40 W., on line with north-south fence; iron post stamped "1094"..... | 1,092.807 |
| Roseau, 0.25 mile west of main street, southwest corner of sec. 13, T. 162 N., R. 39 W., 28 feet north of center of road on section line and 38 feet east of center of road on section line, diagonally across from Norwegian Free Church; iron post stamped "1049"..... | 1,047.869 |
| Roseau River; water surface July 1, 1907..... | 1,030.4 |

GOOS QUADRANGLE.

[Latitude, 48° 45'-49°; longitude, 95° 30'-95° 45'.]

From Greenbush along highway via Badger, Roseau, and Pequis to Warroad (part of line).

| | |
|---|-----------|
| T. 162 N., R. 39 W., 0.37 mile south of corner of secs. 19, 20, 29, and 30, at bend of road to southeast, 84 feet east of house of Mr. Seilstrom, 25 feet east of north-south road; iron post stamped "1066"..... | 1,064.528 |
| Tamarack swamp in sec. 33..... | 1,053 |

| | |
|--|----------------------|
| T. 161 N., R. 39 W., sec. 3, 2 miles west of Goos post office, in burnt clearing east of tamarack and spruce timber, 20 feet south of road and 20 feet north of large rock, in plain view; iron post stamped "1078"..... | Feet. 1, 076. 781 |
| Goos post office, 0.9 mile east of, sec. 1, T. 161 N., R. 39 W., about 45 feet southwest of corner of secs. 1 and 36; iron post stamped "1101"..... | 1, 099. 672 |
| Pequis post office, just east of Hay Creek, southeast corner of yard fence at residence of Fred Pieper, 30 feet southeast of house and 25 feet north of center of road in sec. 26; iron post stamped "1101"..... | 1, 099. 563 |

WARROAD QUADRANGLE.

(Latitude, 48° 45'-49°; longitude, 95° 15'-95° 30'.]

From Greenbush along highway via Badger, Roseau, and Pequis to Warroad (part of line).

| | |
|---|-------------|
| T. 162 N., R. 37 W., sec. 29, probably NE. $\frac{1}{4}$, 3.6 miles east of Pequis, 40 feet south of log cabin in clearing on claim of Alfred Otterson, 36 feet north of center of road, 1 foot south of fence; iron post stamped "1103"..... | 1, 102. 015 |
| Cedarbend post office, near NE. $\frac{1}{4}$ sec. 36, T. 162 N., R. 37 W., 75 feet west of Warroad River bank, 19 feet north of center of road, at southeast corner of garden fence, residence of Henry Stolz; iron post stamped "1103"..... | 1, 102. 138 |
| Cedarbend post office; water surface of Warroad River, July 8, 1907..... | 1, 093 |
| T. 162 N., R. 36 W., near line between secs. 5 and 8, 0.33 mile northeast of schoolhouse, at angle in road, 25 feet west of road, 5 feet north of corner fence post; iron post stamped "1082"..... | 1, 080. 324 |
| Warroad, at west end of lake, 39 feet southwest of crossing of Lake and State streets, on public school grounds, 163 feet east of schoolhouse; iron post stamped "1069"..... | 1, 067. 840 |
| Lake of the Woods; water surface July 10, 1907, range of level between 3 and 4 feet, now about medium..... | 1, 060. 0 |
| Warroad, 1,100 feet east of Lake Street crossing of Canadian Northern Ry., 145 feet east of Mr. Moody's residence, 40 feet north of edge of river and 55 feet southeast of corner of outbuilding on Mr. Moody's grounds; iron post No. 303 of U. S. Engineer Corps; elevation taken on top of cap.... | 1, 065. 956 |
| Warroad, in front of station; top of rail..... | 1, 070. 3 |

ROOSEVELT QUADRANGLE.

(Latitude, 48° 45'-49°; longitude, 95°-95° 15'.]

From Warroad along Canadian Northern Ry. to Baudette (part of line).

| | |
|--|-------------|
| Swift flag station, 360 feet west of road crossing on township line, 40 feet north of track and 57 feet south of Warroad Mercantile Co.'s store, NE. $\frac{1}{4}$ sec. 13, T. 162 N., R. 36 W.; iron post stamped "1085"..... | 1, 083. 622 |
| Roosevelt, 156 feet west of Canadian Northern Ry. station, 35 feet north of track, just west of telegraph pole; iron post stamped "1163"..... | 1, 161. 577 |
| Roosevelt, in front of station; top of rail..... | 1, 163. 7 |

WILLIAMS QUADRANGLE.

(Latitude, 48° 45'-49°; longitude, 94° 45'-95°.]

From Warroad along Canadian Northern Ry. to Baudette (part of line).

| | |
|--|-------------|
| Milepost 308, 8 feet west of, 35 feet south of track; post stamped "1181"..... | 1, 180. 014 |
| Williams, in front of station; top of rail..... | 1, 153. 4 |
| Williams, 180 feet west of station, 70 feet east of head block at west end of switch, 43 feet south of center of track, 57 feet north of northwest corner of hotel; iron post (not stamped)..... | 1, 153. 455 |

| | Feet. | |
|---|---------|---|
| Graceton, in front of station; top of rail..... | 1, 139. | |
| Graceton, 57 feet southeast of corner of station, 36 feet south of center of track, 2 feet south of telegraph pole; iron post stamped "1140"..... | 1, 138. | 4 |

BAUDETTE QUADRANGLE.

[Latitude, 48° 30'-48° 45'; longitude, 94° 30'-94° 45'.]

From Warroad along Canadian Northern Ry. to Baudette (part of line).

| | | |
|---|--------|-----|
| Pitt flag station, 220 feet west of switch block at east end of siding, 33 feet south of center of track, 3 feet west of telegraph pole; iron post stamped "1110"..... | 1, 108 | 712 |
| Winterroad River; water surface, July 20, 1907..... | 1, 075 | |
| Baudette, in front of station; top of rail..... | 1, 083 | 9 |
| Baudette, 650 feet east of station, on north wing wall of west abutment of Canadian Northern Ry. bridge over Rainy River, set vertically in capstone; aluminum tablet stamped "1084"..... | 1, 082 | 652 |
| Rainy River, at Canadian Northern Ry. bridge; water surface July 22, 1907..... | 1, 060 | 5 |

From Baudette along south bank of Rainy River to International Falls (part of line).

| | | |
|--|--------|-----|
| T. 160 N., R. 30 W., corner of secs. 5, 6, 7, and 8, set on south side of and in contact with corner post; iron post stamped "1093"..... | 1, 092 | 031 |
|--|--------|-----|

CLEMENTSON QUADRANGLE.

[Latitude, 48° 30'-48° 45'; longitude, 94° 15'-94° 30'.]

From Baudette along south bank of Rainy River to International Falls (part of line).

| | | |
|---|--------|-----|
| Rainy River, at mouth of Rapid River; water surface July 29, 1907..... | 1, 061 | |
| Rapid River, near mouth of, 64 feet northeast of corner of H. Clementson's house, 175 feet west of rapids, in exposed ledge of bedrock, slightly above surface of ground; aluminum tablet stamped "1088"..... | 1, 085 | 346 |
| Rapid River, above rapids, about 300 feet from mouth; water surface July 29, 1907..... | 1, 069 | |
| T. 160 N., R. 29 W., NE. $\frac{1}{4}$ sec. 5, 35 feet south of corner of house owned by S. Tornquist, 400 feet from river bank; iron post stamped "1089".... | 1, 087 | 778 |
| T. 160 N., R. 29 W., sec. 1, opposite mouth of Pine River on Canadian side, 520 feet east of house of James Pirie (deceased), 250 feet west of Henry Vog's house, close to boundary line between two places, on brow of river bank; iron post stamped "1086"..... | 1, 084 | 799 |
| Black Creek, at mouth of; water surface Aug. 9, 1907..... | 1, 061 | 08 |

BIRCHDALE QUADRANGLE.

[Latitude, 48° 30'-48° 45'; longitude, 94°-94° 15'.]

From Baudette along south bank of Rainy River to International Falls (part of line).

| | | |
|--|--------|-----|
| T. 160 N., R. 28 W., corner of secs. 20, 21, 28, and 29, beside corner stake, 815 feet southwest of Mr. Murphy's store, Frontier post office, 815 feet southwest of nearest point of river bank; iron post stamped "1086".... | 1, 085 | 030 |
| T. 160 N., R. 28 W., sec. 25, 215 feet west of line between Rs. 27 and 28, on point of land between creek and river, opposite Bernstein's house on Canadian side, just below Boucherville, about 330 feet east of Brindle's house; iron post stamped "1081"..... | 1, 080 | 805 |

| | |
|---|----------------------|
| T. 160 N., R. 27 W., on cleared land 30 feet due west of corner of secs. 27, 28, 29, and 30, 1 mile north of Birchdale post office; iron post stamped "1111"..... | Feet. 1, 110. 124 |
| Rainy River, at Birchdale Landing; water surface July 20, 1907..... | 1, 062. 1 |
| T. 160 N., Rs. 26 and 27 W., on range line between secs. 31 and 36, on south side of well-cut trail or road, 85 feet south of bearing trees for meander corner at river's edge; iron post stamped "1093"..... | 1, 091. 873 |

INDUS QUADRANGLE.

[Latitude, 48° 30'–48° 45'; longitude, 93° 45'–94°.]

From Baudette along south bank of Rainy River to International Falls (part of line).

| | |
|---|-------------|
| T. 160 N., R. 26 W., sec. 34, 150 feet east of line between secs. 33 and 34, at edge of Rainy River, in rock about 6 feet long, standing 3 feet out of water; aluminum tablet stamped "1074"..... | 1, 072, 332 |
| Rainy River, at Lundy's mill, opposite Barwick, Ontario; water surface Aug. 28, 1907..... | 1, 070. 0 |
| Tps. 159 and 160 N., Rs. 25 and 26 W., near corner of, 35 feet west of range line, 15 feet north of township line; iron post stamped "1113"..... | 1, 111. 404 |
| T. 159 N., R. 25 W., NE. $\frac{1}{4}$ sec. 3, Indus post office, on brow of slope descending to river, at edge of board walk between H. Scholta's saloon and Indus Mercantile Co.'s store; iron post stamped "1106"..... | 1, 105. 242 |
| Rainy River, at Indus; water surface Sept. 3, 1907..... | 1, 074. 0 |
| T. 159 N., R. 25 W., in southwest corner of sec. 23, 30 feet east of corner of secs. 22, 23, 26, and 27; iron post stamped "1097"..... | 1, 095. 830 |
| Tps. 158 and 159 N., R. 25 W., 93 feet due east of corner of secs. 2, 3, 34, and 35, 5 feet west of balsam line tree; iron post stamped "1100"..... | 1, 098. 766 |

PELLAND QUADRANGLE.

[Latitude, 48° 30'–48° 45'; longitude, 93° 30'–93° 45'.]

From Baudette along south bank of Rainy River to International Falls (part of line).

| | |
|---|-------------|
| Black River; water surface Sept 11, 1907..... | 1, 076. 2 |
| T. 158 N., R. 25 W., corner of secs. 11, 12, 13, and 14 (corner post not found, but its position closely located by Mr. Metcalf, farmer); iron post stamped "1098"..... | 1, 097. 062 |
| Big Fork River, one-half mile above mouth; water surface Sept. 12, 1907.. | 1, 077. 0 |
| T. 70 N., R. 26 W., NE. $\frac{1}{4}$ sec. 32, 370 feet south of bank of Rainy River at Fred Smith's place (Laurel store and post office), 40 feet east of southeast corner of Smith's barn, in fence corner; iron post stamped "1102"..... | 1, 100. 775 |
| T. 70 N., on line between Rs. 25 and 26 W., 528 feet due north of corner of secs. 25, 30, 31, and 36; iron post stamped "1106"..... | 1, 104. 532 |
| Little Fork River; water surface Oct. 2, 1907..... | 1, 079. 1 |
| T. 70 N., R. 25 W., corner of secs. 23, 24, 25, and 26, beside corner post; iron post stamped "1124"..... | 1, 123. 132 |

INTERNATIONAL FALLS QUADRANGLE.

[Latitude, 48° 30'–48° 45'; longitude, 93° 15'–93° 30'.]

From Baudette along south bank of Rainy River to International Falls (part of line).

| | |
|---|-------------|
| T. 70 N., R. 24 W., 246 feet west of corner of secs. 16, 17, 20, and 21, on section line; iron post stamped "1149"..... | 1, 148. 094 |
| T. 70 N., R. 24 W., SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 4, 860 feet northeast of end of curve, 50 feet northwest of center of track, at clay cut, on land of Robert Irwin; iron post stamped "1152"..... | 1, 150. 392 |

| | |
|---|------------|
| International Falls, 300 feet north of First Street, in line with Third Avenue, 180 feet southwest of edge of Rainy River, in ledge of solid rock in front of office of Maguire & Penniman (temporary); aluminum tablet stamped | Feet. |
| "1126"..... | 1, 124.376 |
| International Falls, near station; top of rail..... | 1, 117.6 |
| International Falls, north side of Riverside drive, 10 feet south of brow of river bank, 650 feet northeast of Eighth Avenue, in line with Seventh Avenue; iron post stamped "1121"..... | 1, 120.250 |
| Rainy River, above falls; water surface, Oct. 10, 1907..... | 1, 106.1 |
| Rainy River, below falls, water surface, Oct. 10, 1907..... | 1, 082.1 |

PRIMARY LEVELING.

PRIMARY LEVELS ENCIRCLING AND WITHIN THE AREA OF THE MUD LAKE DRAINAGE PROJECT.

Bagley, Bemidji, Buena Vista, E, Esplee, Foy, Garland, Germantown, Grit, Jelle,
Lindford, Liner, Malcolm, Middle River, Nebish, Pencer, Quiring, Rollis, Solway,
Thief River Falls, Winsor, and Winterroad quadrangles.

BELTRAMI, CLEARWATER, MARSHALL, POLK, RED LAKE, AND ROSEAU COUNTIES

The elevations in the following list were obtained as the result of
primary leveling in the fall of 1906, by C. H. Semper, A. P. Meade, jr.,
Paul Funderhide, and R. P. Thompson. None of the bench marks
have elevations stamped upon them.

THIEF RIVER FALLS QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 96°-96° 15'.]

From Thief River Falls east to Beltrami County line (part of line).

| | |
|--|------------|
| | Feet. |
| T. 154 N., Rs. 42 and 43 W., corner of secs. 25, 30, 31, and 36; iron post.. | 1, 129.769 |
| Tps. 153 and 154 N., R. 42 W., corner of secs. 4, 5, 32, and 33; iron post.. | 1, 135.906 |
| Tps. 153 and 154 N., R. 42 W., corner of secs. 1, 2, 35, and 36; iron post.. | 1, 149.149 |

From Thief River Falls to Thorwick.

| | |
|---|------------|
| T. 154 N., R. 43 W., corner of secs. 22, 23, 26, and 27; iron post..... | 1, 128.211 |
| T. 154 N., Rs. 42 and 43 W., corner of secs. 7, 12, 13, and 18; iron post.... | 1, 138.101 |
| Tps. 154 and 155 N., Rs. 42 and 43 W., corner of secs. 1, 6, 31, and 36, on range line; iron post..... | 1, 140.520 |

From Thorwick east to Germantown and northeast to Liner (part of line).

| | |
|--|------------|
| Tps. 154 and 155 N., R. 42 W., corner of secs. 3, 4, 33, and 34, 35 feet north- west of; iron post..... | 1, 146.653 |
|--|------------|

MIDDLE RIVER QUADRANGLE.

[Latitude, 48° 15'-48° 30'; longitude, 96°-96° 15'.]

From Thorwick to Mud Lake.

| | |
|--|------------|
| T. 155 N., R. 42 W., corner of secs. 18 and 19, on range line; iron post.... | 1, 137.620 |
| Tps. 155 and 156 N., R. 42 W., quarter corner between secs. 5 and 32; iron post | 1, 137.943 |
| Elm Lake; water surface Aug. 31, 1906..... | 1, 141.4 |
| Mud Lake; water surface Sept. 2, 1906..... | 1, 139.3 |

From Gatzke west to Middle River (part of line).

| | Feet. |
|---|-------------|
| T. 157 N., R. 42 W., corner of secs. 9, 10, 15, and 16; iron post..... | 1, 152. 738 |
| T. 157 N., Rs. 42 and 43 W., corner of secs. 7, 12, 13, and 18; iron post.... | 1, 142. 675 |

GERMANTOWN QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 95° 45'-96°.]

From Thief River Falls east to Beltrami County line (part of line).

| | |
|--|-------------|
| Tps. 153 and 154 N., R. 41 W., corner of secs. 4, 5, 32 and 33; iron post.... | 1, 155. 584 |
| Tps. 153 and 154 N., R. 41 W., corner of secs. 1, 2, 35, and 36; iron post.... | 1, 164. 896 |
| Tps. 153 and 154 N., R. 40 W., corner of secs. 4, 5, 32, and 33; iron post.... | 1, 172. 727 |

From Thorwick east to Germantown and northeast to Liner (part of line).

| | |
|--|-------------|
| Tps. 154 and 155 N., Rs. 41 and 42 W., 60 feet south of corner of secs. 1, 6, 31, and 36; iron post..... | 1, 149. 190 |
| Germantown, corner of William Vaughan's house; iron post..... | 1, 156. 858 |
| T. 155 N., Rs. 40 and 41 W., 300 feet north of quarter corner between secs. 13, and 18; iron post..... | 1, 154. 166 |
| T. 156 N., R. 40 W., SW. $\frac{1}{4}$ sec. 34; iron post..... | 1, 158. 580 |

On Germantown and Grygia road.

| | |
|---|-------------|
| T. 155 N., R. 40 W., NW. $\frac{1}{4}$ sec. 22, near bridge; iron post..... | 1, 161. 614 |
|---|-------------|

ESPLEE QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 95° 30'-95° 45'.]

From Thief River Falls east to Beltrami County line (part of line).

| | |
|---|-------------|
| Tps. 153 and 154 N., R. 40 W., corner of secs. 1, 2, 35, and 36; iron post.. | 1, 177. 009 |
| Tps. 153 and 154 N., R. 39 W., corner of secs 4, 5, 32 and 33, northwest corner of crossroads; iron post | 1, 181. 625 |
| Tps. 153 and 154 N., R. 39 W., corner of secs. 1, 2, 35, and 36, 33 feet south of large granite boulder; iron post..... | 1, 181. 314 |
| NOTE.—Ground very boggy and bench mark loose. | |

North along range line to McPhail.

| | |
|--|-------------|
| T. 154 N., Rs. 38 and 39 W., corner of secs. 24, 25, 19, and 30 (no section post); iron post..... | 1, 184. 346 |
| T. 154 N., R. 39 W., SE. $\frac{1}{4}$ sec. 1, 150 feet east of N. J. Jorgenson's house, at barnyard fence (no section corner found); iron post..... | 1, 182. 920 |

Scattered bench marks.

| | |
|---|-------------|
| Erie post office, T. 153 N., Rs. 39 and 40 W., corner of secs. 13, 18, 19, and 24; iron post..... | 1, 167. 895 |
| Tps. 152 and 153 N., R. 39 W., corner on township line common to secs. 3, 4, 33, and 34; iron post..... | 1, 166. 164 |

ROLLIS QUADRANGLE.

[Latitude, 48° 15'-48° 30'; longitude, 95° 45'-96°.]

Scattered bench marks.

| | |
|---|-------------|
| T. 157 N., Rs. 38 and 39 W., corner of secs. 1, 6, 7, and 12; iron post..... | 1, 180. 645 |
| T. 158 N., R. 40 W., between secs. 27 and 28, at corner of fence opposite house, 40 feet south of Moose River. Established in 1907; no elevation stamped..... | 1, 164. 927 |

| | Feet. |
|---|-------------|
| T. 157 N., R. 40 W., NE. $\frac{1}{4}$ sec. 36, on John Saxvold's farm; iron post | 1, 170. 786 |
| T. 157 N., R. 40 W., corner of secs. 11, 12, 13, and 14, west side of road; iron post..... | 1, 181. 472 |

From Gatake west to Middle River (part of line).

| | |
|---|-------------|
| T. 157 N., R. 40 W., corner of secs. 3, 4, 9, and 10, south side of road; iron post..... | 1, 180. 074 |
| Thief Lake; water surface Oct. 13, 1906..... | 1, 161. 5 |
| T. 157 N., Rs. 40 and 41 W., corner of secs. 1, 6, 7, and 12, north side of road; iron post..... | 1, 172. 260 |
| Thief River, at section line between secs. 5 and 8; water surface Oct. 13, 1906..... | 1, 146. 2 |
| T. 157 N., R. 41 W., at quarter corner between secs. 6 and 7; iron post.... | 1, 153. 347 |

LINER QUADRANGLE.

[Latitude, 48° 15'-48° 30'; longitude, 95° 30'-95° 45'.]

From Malcolm west via Grygla to Liner, thence north to Gatake (part of line).

| | |
|--|-------------|
| T. 155 N., R. 38 W., sec. 2, 768 feet north of Carmel post office; iron post.. | 1, 200. 477 |
| Tps. 155 and 156 N., R. 38 W., corner of secs. 5, 6, 31, and 32, at northwest corner of fence; iron post..... | 1, 185. 655 |
| T. 156 N., R. 39 W., southeast corner of sec. 26, Grygla post office, A. O. Fladeland's yard; iron post..... | 1, 177. 499 |
| T. 156 N., R. 39 W., sec. 19, 110 feet southeast of store at Liner post office, at corner of wire fence; iron post..... | 1, 165. 408 |

JELLE QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 95° 15'-95° 30'.]

From McPhail east to Sand Ridge.

| | |
|--|-------------|
| T. 155 N., R. 38 W., corner of secs. 29, 30, 31, and 32, near wire fence; iron post..... | 1, 187. 662 |
| T. 155 N., R. 38 W., corner of secs. 26, 27, 34, and 35; iron post..... | 1, 194. 579 |
| T. 155 N., R. 37 W., corner of secs. 29, 30, 31, and 32, near wire fence line; iron post..... | 1, 205. 878 |
| T. 155 N., R. 37 W., corner of secs. 26, 27, 34, and 35, near wire fence line; iron post..... | 1, 210. 988 |
| T. 155 N., R. 36 W., corner of secs. 19, 20, 29, and 30; iron post..... | 1, 224. 114 |
| T. 155 N., R. 36 W., center of sec. 27, 35 feet north of quarter corner; iron post..... | 1, 229. 061 |

GARLAND QUADRANGLE.

[Latitude, 48° 30'-48° 45'; longitude, 95° 45'-96°.]

Other scattered bench marks.

| | |
|---|-------------|
| T. 158 N., R. 40 W., in southwest corner of sec. 14, at forks of Randen road and trail north; iron post..... | 1, 204. 996 |
|---|-------------|

MALCOLM QUADRANGLE.

[Latitude, 48° 15'-48° 30'; longitude, 95° 15'-95° 30'.]

From Sand Ridge north 8 miles, thence west to Malcolm.

| | |
|--|-------------|
| T. 155 N., R. 36 W., NE. $\frac{1}{4}$ sec. 14, at north end of Sand Ridge, east end of clearing, 25 feet east of large poplar tree; iron post..... | 1, 244. 280 |
| T. 156 N., R. 36 W., corner of secs. 15, 16, 21, and 22, near fence line; iron post..... | 1, 237. 664 |

| | |
|--|----------------------|
| T. 156 N., Rs. 36 and 37 W., corner of secs. 13, 18, 19, and 24, near fence line; iron post..... | Feet. 1, 227. 746 |
|--|----------------------|

From Malcolm west via Grygla to Linar, thence north to Gatake (part of line).

| | |
|--|-------------|
| T. 156 N., R. 37 W., corner of secs. 22, 23, 26, and 27; iron post..... | 1, 223. 166 |
| T. 156 N., R. 37 W., northwest corner of NE. $\frac{1}{4}$ sec. 31, northwest corner of Ole Baklund's farm; iron post..... | 1, 208. 990 |

PENCER QUADRANGLE.

[Latitude, $48^{\circ} 30' - 48^{\circ} 45'$; longitude, $95^{\circ} 30' - 95^{\circ} 45'$.]

Scattered bench marks.

| | |
|---|-------------|
| T. 159 N., R. 39 W., sec. 34, probably in NE. $\frac{1}{4}$, along road going up Roseau River, about 400 feet southeast of vacant cabin, between river and road at bridge crossing river; iron post..... | 1, 177. 657 |
| T. 160 N., Rs. 38 and 39 W., corner of secs. 1, 6, 7, and 12; iron post. (This elevation is in doubt within limit of 1 foot)..... | 1, 106. 21 |
| T. 159 N., R. 39 W., SE. $\frac{1}{4}$ sec. 18, on east side of road 300 feet north of old Casperson post office, at bridge crossing Roseau River; iron post..... | 1, 148. 08 |

WINTERROAD QUADRANGLE.

[Latitude, $48^{\circ} 30' - 48^{\circ} 45'$; longitude, $95^{\circ} - 95^{\circ} 15'$.]

Scattered bench marks.

| | |
|---|------------|
| T. 161 N., R. 35 W., SW. $\frac{1}{4}$ sec. 35, 150 feet east of Jack Meise's cabin, 500 feet east of section line, about 200 feet north of Roseau-Beltrami county line; iron post..... | 1, 225. 88 |
| T. 159 N., R. 36 W., SW. $\frac{1}{4}$ sec. 14, on old Government inspector's trail; iron post..... | 1, 266. 44 |

E QUADRANGLE.

[Latitude, $48^{\circ} 30' - 48^{\circ} 45'$; longitude, $95^{\circ} 15' - 95^{\circ} 30'$.]

| | |
|---|------------|
| T. 159 N., R. 37 W., near center of sec. 17, at junction of trails, one north and one up Roseau River; iron post..... | 1, 223. 62 |
|---|------------|

LINDFORD QUADRANGLE.

[Latitude, $48^{\circ} 15' - 48^{\circ} 30'$; longitude, $93^{\circ} 45' - 94^{\circ}$.]

From Loman up Black River (spur line).

| | |
|--|-------------|
| T. 158 N., R. 25 W., corner of secs. 28, 29, 32, and 33, 8 inches west of corner post; iron post stamped "1135"..... | 1, 134. 174 |
| T. 158 N., Rs. 26 and 27 W., corner of secs. 19, 30, 24, and 25, 1.5 feet west of corner post; iron post stamped "1144"..... | 1, 143. 238 |

BEMIDJI QUADRANGLE.

[Latitude, $47^{\circ} 15' - 47^{\circ} 30'$; longitude, $94^{\circ} 45' - 95^{\circ}$.]

From Bemidji along Minneapolis, Red Lake & Manitoba Ry. to Red Lake (part of line).

| | |
|---|-------------|
| Bemidji, 800 feet west of Great Northern Ry. station, in corner of E. J. Willett's yard, on west side of Irving Avenue, north of Great Northern Ry. right of way; cap on top of iron post (Miss. R. Comm. b. m.)..... | 1, 361. 717 |
| T. 146 N., Rs. 33 and 34 W., 60 feet southeast of corner of secs. 6, 7, 1, and 12, corner of wire fence, 325 feet north of Great Northern Ry. (corner stake not found); iron post stamped "1387 Minnesota"..... | 1, 385. 750 |

BUENA VISTA QUADRANGLE.

[Latitude, 47° 30'-47° 45'; longitude, 94° 45'-95°.]

From Bemidji along Minneapolis, Red Lake & Manitoba Ry. to Red Lake (part of line).

- Marsh flag station, 27 feet east of platform, 40 feet east of center of track, directly opposite flag station signboard, 80 feet north of switch stand at south end of siding; iron post stamped "1402 Minnesota"..... 1,
 Werner flag station (Campbell Lake), 50 feet east of center of track and opposite station platform, 150 feet south of road crossing; iron post stamped "1371 Minnesota"..... 1,
 Campbell Lake; water surface October 19, 1907..... 1,
 Puposky station, 275 feet southeast of, at northeast corner of block 13, Puposky town site, in exact position of corner stake, 180 feet east of railroad track, in front of house of A. E. Hodgson; iron post stamped "1368 Minnesota"..... 1,
 Mud Lake; water surface October 27, 1907..... 1,

From Puposky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (part of line).

- T. 149 N., R. 34 W., road crossing at Fowlds station, foot of telephone pole on west side of track; iron post marked "1391"..... 1,

NEBISH QUADRANGLE.

[Latitude, 47° 45'-48°; longitude, 94° 45'-95°.]

From Bemidji along Minneapolis, Red Lake & Manitoba Ry. to Red Lake (part of line).

- T. 149 N., R. 33 W., corner of secs. 15, 16, 21, and 22, 65 feet east of railroad track, 70 feet north of center of platform at Neeley siding flag station; iron post stamped "1382 Minnesota." (Exact corner not found, but location is close according to bearing trees)..... 1,
 Nebish station, 0.4 mile north of, 365 feet north of switch stand at point of spur south to station, 50 feet west of center of track, on rise of ground about level with track, in front of buildings of John Lauk in NW. $\frac{1}{4}$ sec. 27; iron post stamped "1351 Minnesota"..... 1,
 Nebish Lake; water surface October 23, 1907..... 1,
 Nebish station, 4.33 miles north of, 2,000 feet north of milepost 29, at south end of cut near old abandoned log camp, 28 feet west of center of tracks and 0.6 foot lower than top of rail, on steep side hill, probably in NE. $\frac{1}{4}$ sec. 8; iron post stamped "1274 Minnesota"..... 1,
 Redby station, 0.4 mile south of, 460 feet south of roundhouse and opposite switch stand, at south end of Y, 60 feet west of center of track and 2.5 feet lower than top of rail; iron post stamped "1229 Minnesota"..... 1,
 Red Lake; water surface October 25, 1907..... 1,

From Redby around east end of Red Lake via Quiring, Foy, and Shotley to Tamarack River (part of line).

- T. 151 N., R. 32 W., sec. 30, near south boundary and approximately 0.25 mile west of southeast corner of, 500 feet east of Hay Creek, at abandoned lumber camp, in open grassy land, 150 feet south of largest log building in camp, just on north side of an east-west log fence, in line with a log fence running south, 3 feet north of bars through fence; iron post stamped "1221 Minnesota"..... 1,

QUIRING QUADRANGLE.

[Latitude, 47° 45'-48"; longitude, 94° 30'-94° 45'.]

From Redby around east end of Red Lake via Quiring, Foy, and Shotley to Tamarack River (part of line).

| | |
|--|---------------------|
| T. 151 N., R. 32 W., northeast corner of sec. 27, 0.12 mile south of section corner, 250 feet west of section line, inside of yard fence at residence of D. W. Carter (Quiring post office), 40 feet south of east end of house; iron post stamped "1202 Minnesota"..... | Feet. 1, 200.420 |
| Tps. 151 and 152 N., R. 32 W., corner of secs. 2, 3, 34, and 35, in position of corner stake, in low swampy ground, 950 feet north of Cormorant Creek; iron post stamped "1179 Minnesota"..... | 1, 177.461 |
| NOTE.—This post is liable to settlement, as it settled $\frac{1}{4}$ inch under two blows with iron bar after being well tamped and set. Ground is soft. | |
| T. 152 N., R. 32 W., SE. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 27, Battle River post office, residence of Joseph Peronie, 3.5 feet south and 3 feet east of southwest corner of store, 160 feet east of Indian reservation line; iron post stamped "1188". | 1, 186.401 |
| T. 152 N., R. 31 W., 43 feet N. 27° E. (magnetic bearing) from southwest corner sec. 18, about 350 feet north of Saum post office and store; iron post stamped "1192 Minnesota"..... | 1, 191.229 |
| T. 152 N., R. 31 W., 225 feet N. 45° W. (magnetic bearing) from quarter corner between secs. 6 and 7, 48 feet south of front of house of John Carlson (Foy post office), 4 feet south of yard fence; iron post stamped "1199 Minnesota"..... | 1, 197.369 |

FOY QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 94° 30'-94° 45'.]

From Redby around east end of Red Lake via Quiring, Foy, and Shotley to Tamarack River (part of line).

| | |
|--|------------|
| T. 153 N., R. 31 W., corner of secs. 19, 20, 29, and 30 (exact position of corner stake, which was lying on ground, could not be determined, but post must be within 3 or 4 feet of corner); iron post stamped "1212 Minnesota"..... | 1, 210.515 |
| T. 153 N., R. 31 W., 22 feet northwest of corner of secs. 9, 10, 15, and 16, 10 feet northwest of 2-foot oak bearing tree; iron post stamped "1183 Minnesota"..... | 1, 182.042 |
| T. 154 N., R. 31 W., sec. 36, 30 feet west of range line on bank of lake, 125 feet north of schoolhouse and in line with northeast side of building, about 400 feet southwest of Domaas post office; iron post stamped "1183 Minnesota"..... | 1, 182.066 |
| T. 154 N., R. 30 E., NE. $\frac{1}{4}$ sec. 8, on north bank of Tamarack River, near its mouth, 70 feet north of river bank, 15 feet east of an oak tree which is most southerly on first ridge from beach, 28 feet north of an old log cabin; iron post stamped "1183 Minnesota"..... | 1, 181.535 |
| T. 155 N., R. 31 W., SE. $\frac{1}{4}$ sec. 36, 500 or 600 feet north of Red Lake, 150 feet west of Moose Creek, on firm ground in birch and balsam timber, 20 feet east of small log cabin; iron post stamped "1182 Minnesota"..... | 1, 181.292 |

The elevations in the following lists were obtained as the result of primary leveling in 1908 by A. P. Meade, jr., and Paul Funderhide:

SOLWAY QUADRANGLE.

[Latitude, 47° 30'–47° 45'; longitude, 95°–95° 15'.]

From Puposky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (part of line).

| | Feet. |
|--|--------|
| T. 149 N., R. 34 W., sec. 32; water surface of lake..... | 1, 370 |
| T. 149 N., R. 35 W., sec. 35; water surface of Sandy Lake..... | 1, 352 |

BAGLEY QUADRANGLE.

[Latitude, 47° 30'–47° 45'; longitude, 95° 15'–95° 30'.]

From Puposky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (part of line).

| | |
|--|-------------|
| T. 148 N., R. 35 W., 300 feet west of northeast corner of sec. 4 (Aure post office); iron post stamped "1420"..... | 1, 419. 010 |
| T. 148 N., R. 36 W., NW. $\frac{1}{4}$ sec. 2, 300 feet east of cabin, 600 feet west of barn; iron post stamped "1483"..... | 1, 481. 582 |
| T. 149 N., R. 36 W., 700 feet south of quarter corner between secs. 32 and 33; iron post stamped "1472"..... | 1, 470. 775 |
| T. 149 N., R. 37 W., corner of secs. 22, 23, 26, and 27, at northeast fence corner of crossroads; iron post stamped "1331"..... | 1, 329. 609 |
| Ruffy Brook; water surface near last-mentioned post..... | 1, 313. 4 |
| Ruffy Brook; water surface in sec. 15..... | 1, 292 |
| T. 149 N., R. 37 W., near corner of secs. 4, 5, 8, and 9, 0.25 mile north of Leon post office, at northwest corner of crossroads, at foot of fence and opposite schoolhouse; iron post stamped "1241"..... | 1, 239. 600 |
| Ruffy Brook; water surface in sec. 5..... | 1, 230 |
| T. 149 N., R. 38 W., Lost River, on line between secs. 1 and 12; water surface..... | 1, 226 |

WINSOR QUADRANGLE.

[Latitude, 47° 45'–48°; longitude, 95° 30'–95° 45'.]

From Puposky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (part of line).

| | |
|---|-------------|
| T. 150 N., R. 38 W., Winsor post office, near quarter corner between secs. 27 and 28, at southeast fence corner opposite store and at road forks; iron post stamped "1215"..... | 1, 213. 953 |
| T. 150 N., R. 39 W., Gully post office, SW. $\frac{1}{4}$ sec. 26, at fence corner, forks of road, opposite store; iron post stamped "1223"..... | 1, 222. 189 |
| T. 150 N., R. 40 W., sec. 9, Espetvet post office, at northeast corner of store building; iron post stamped "1150"..... | 1, 148. 977 |

GRIT QUADRANGLE.

[Latitude, 47° 45'–48°; longitude, 95° 45'–96°.]

From Puposky west via Fowlds, Aure, Winsor, Gully, and Espetvet to Rhoda (part of line).

| | |
|--|-------------|
| Lost River, near Espetvet; water surface..... | 1, 140 |
| T. 151 N., R. 40 W., near corner of secs. 3, 4, 9, and 10, at fence corner in sec. 10; iron post stamped "1161"..... | 1, 159. 998 |
| T. 152 N., R. 40 W., sec. 33, Clear Water River at bridge; water surface.... | 1, 150 |
| T. 152 N., R. 40 W., near corner of secs. 8, 9, 17, and 16, one-half mile north of Rhoda post office, at fence corner; iron post stamped "1158"..... | 1, 157. 316 |

Ashby, Barnesville, Barrett, Battle Lake, Chokio, Detroit Lake, Fergus Falls, Herman, Morris, Pelican Rapids, Perham, Rothsay, Underwood, Vergas, and Wendell quadrangles.

GRANT, OTTER TAIL, AND STEVENS COUNTIES.

The elevations in the following list were determined by primary leveling extended from the precise-level line of the Coast and Geodetic Survey which crosses the Barrett, Herman, Ashby, Wendell, and Fergus Falls quadrangles.

The leveling was done in the Ashby quadrangle in 1910 by J. M. Ray, in Barrett and Herman quadrangles in 1909 by C. R. Beckler, in Battle Lake quadrangle by E. C. Bibbee in 1910 and by Ray in 1910 and 1911, in Chokio quadrangle in 1909 by G. E. Halstead and in 1910 by Bibbee, in Barnesville quadrangle in 1912 by Ray, in Detroit Lake and Vergas quadrangles in 1911 by Ray, in Fergus Falls quadrangle by Ray in 1910, 1911, and 1912, in Morris quadrangle in 1909 by Halstead, in Pelican Rapids quadrangle in 1911 and 1912 by Ray, in Perham quadrangle in 1911 by Ray, in Rothsay and Underwood quadrangles by Ray and Bibbee in 1910, in Wendell quadrangle by Beckler in 1909 and by Ray and Bibbee in 1910.

ASHBY QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 95° 45'-96°.]

From Elbow Lake north along highways to Parkdale.

| | |
|--|-----------|
| Elbow Lake, in north end of sandstone doorsill of First National Bank building, 1.8 meters north of south side of building, 0.4 meter above sidewalk, 0.1 meter east of front edge of sill, 0.08 meter south of brickwork | Feet. |
| 0.5 meter north of center of doorway; red metal disk (C. & G. S. b. m. X 1) | 1,212.508 |
| T. 130 N., R. 42 W., northeast corner of sec. 31, 0.2 mile south of Woesner's house, 2 feet from fence line; iron post stamped "1179"..... | 1,177.695 |
| T. 130 N., R. 42 W., southeast corner of sec. 7, 0.5 mile west of Fourmile Lake, 3 feet south of fence corner; iron post stamped "1177"..... | 1,175.702 |
| Tenmile Lake, 0.2 mile west of, 150 feet east of E. T. Reesburg's lane, on south side of road, 2 feet north of fence line; iron post stamped "1236"..... | 1,234.114 |
| Tenmile Lake; water surface July 21, 1910 | 1,187.1 |
| T. 131 N., R. 42 W., near southeast corner of sec. 16, 0.2 mile east of north end of Tenmile Lake, 1,000 feet northwest of S. Fossen's house, 3 feet inside of fence and 4 feet on west side of road, on summit; iron post stamped "1229"..... | 1,227.908 |
| Parkdale Mill, 0.4 mile north of, southwest corner of sec. 33, T. 132 N., R. 42 W., 3 feet east of lane to Hans Rynn's house; iron post stamped "1259"..... | 1,257.317 |
| Parkdale, between fifteenth and sixteenth telegraph poles west of milepost 181, on public road, two-thirds meter south of right-of-way fence, in stone post lettered "U. S. B. M."; copper bolt (C. & G. S. b. m. V 3)..... | 1,232.101 |
| From point 2 miles south of Swan Lake church north and east along highways to point 1.6 miles northeast of old Tordenskj post office, thence south along highways to point 1.5 miles northwest of Ashby. | |
| Swan Lake Church, 75 feet northeast of, 6 miles southeast of Fergus Falls, 2 feet east of fence; iron post stamped "1313"..... | 1,312.004 |

- T. 132 N., R. 42 W., southeast corner of sec. 14, 700 feet southeast of P. Johnson's house, 30 feet west by 10 feet north of corner, near fence line; iron post stamped "1345"..... 1,
 Tordenskj post office (old), 0.9 mile northeast of, 120 feet north of mail box near forks of road to J. S. Torgenson's, 10 feet east of road; iron post stamped "1295"..... 1,
 T. 131 N., R. 41 W., east quarter corner of sec. 7, 2 miles east of Dalton, 100 feet northeast of Synod Church; iron post stamped "1358"..... 1,
 T. 131 N., R. 41 W., southeast corner of sec. 29, 3 miles northwest of Ashby, 60 feet northwest of A. L. Anderson's mail box, 3 feet east of fence; iron post stamped "1326"..... 1,

From bench mark at southeast corner of sec. 29, T. 131 N., R. 41 W., south along highways to Thorsborg.

- T. 130 N., R. 41 W., southwest corner of sec. 31, 4 miles northwest of Ashby, 2 feet west of fence; iron post stamped "1265"..... 1,
 T. 130 N., R. 42 W., northeast corner of sec. 24, at old Pomme de Terre post office, 400 feet south of crossroads, 3 feet east of fence; iron post stamped "1248"..... 1,
 T. 130 N., R. 42 W., northeast corner of sec. 35, 4 miles north of Thorsborg, corner of land owned by A. Woesner, 3 feet east of fence; iron post stamped "1199 Min"..... 1,
 Thorsborg, in NW. $\frac{1}{4}$ sec. 13, 110 meters north by 60 meters west of station, at southwest corner of pasture belonging to Henry Lajord, at northeast corner of crossroads, 10 meters east by 5 meters north of line of travel; iron post (C. & G. S. b. m. V 1)..... 1,

From Erdahl north along highways to Ashby.

- Erdahl, on land of T. Tokiason, of Ashby, at east line of Main Street, 58 meters south of railway at point 70 meters west of station, 7 meters east of line of travel, 17 meters northeast of frame store of A. J. Okelgren, 24 meters south of a grain elevator; iron post (C. & G. S. b. m. U 1)..... 1,
 Erdahl, 3 miles north of, 250 feet west of K. E. Johnson's mail box, 30 feet north of road, inside of fence, near northeast corner of sec. 24, T. 130 N., R. 41 W.; iron post stamped "1225"..... 1,
 Pelican Lake; water surface August 24, 1910..... 1,
 T. 130 N., R. 41 W., 700 feet east of northwest corner of sec. 22, 2.5 miles south of Ashby, near telephone pole; iron post stamped "1250"..... 1,
 Ashby, at southwest corner of Melby Street and street one block south of Main Street, at northeast corner of property owned by J. Madland, 3 meters from property line; stone post lettered "U. S. B. M." (C. & G. S. b. m. P 3)..... 1,

From Ashby north and west along highways to point near old Tordenskj post office.

- Ashby, southwest corner of city park, northeast corner of Larson Street and street one block south of Main Street, 4 feet from sidewalk; iron post stamped "1295" Minn..... 1,
 Ashby, 3 miles northeast of, at junction of road to Eagle Lake, 20 feet north of signpost reading "Eagle Lake 4 miles," at corner of Soren Knudson's land; iron post stamped "1281 Minn"..... 1,
 T. 131 N., R. 41 W., northwest corner of sec. 12, 6.8 miles northeast of Ashby, 30 feet north of circular mail box; iron post stamped "1318".... 1,
 T. 132 N., R. 41 W., 0.2 mile west of southeast corner of sec. 25, 9.3 miles north of Ashby, 60 feet northeast of signpost reading "8 miles to Battle Lake," 20 feet east of road; tack in stump painted "U. S. B. M. 1356.6" .. 1

| | |
|---|----------------------|
| T. 132 N., R. 41 W., 0.5 mile east of northwest corner of sec. 25, 10.4 miles northeast of Ashby, 60 feet east of signpost at forks of road reading "Battle Lake 7 miles, Fergus Falls, 17 miles," east side of north-south road; iron post stamped "1381"..... | Feet. 1, 379. 355 |
| T. 132 N., R. 41 W., 0.2 mile west of center of sec. 27, 800 feet southeast of G. Krilvang's house, 12.9 miles north of Ashby, 20 feet north of road; iron post stamped "1282 Minn"..... | 1, 280. 718 |

BARNESVILLE QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 96° 15'–96° 30'.]

From T. 137 N., R. 44 W., sec. 30 south to Rothsay.

| | |
|---|-------------|
| T. 137 N., R. 44 W., 0.2 mile north of southeast corner of sec. 30, 50 feet west by 30 feet north of crossroads; iron post stamped "Prim. Trav. Sta. No. 4, 1241, Minn., 1911"..... | 1, 238. 222 |
| T. 137 N., R. 44 W., southeast corner of sec. 31, 200 feet northeast of small pond at T road north, 1 foot southwest of section corner stone; chiseled ring on rock, painted "U.S.B.M. 1209.8"..... | 1, 207. 21 |
| T. 136 N., R. 44 W., 0.2 mile north of southwest corner of sec. 6, 200 feet northwest of white church, 60 feet southeast of Andrew Evanson's mail box; copper nail in corner fence post, painted "U. S. B. M. 1197.4".... | 1, 194. 85 |
| T. 136 N., R. 44 W., west quarter corner of sec. 7, 11.2 miles north of Rothsay, at T road east, 35 feet south by 30 feet east of T road east; copper nail in corner fence post, painted "U. S. B. M. 1205.5"..... | 1, 202. 95 |
| T. 136 N., R. 44 W., east quarter corner sec. 7, 10.3 miles northeast of Rothsay, at schoolhouse (district 201); iron post stamped "1230"..... | 1, 228. 327 |
| T. 136 N., R. 44 W., southwest corner of sec. 17, 8.8 miles northeast of Rothsay, at crossroads; copper nail in telephone pole, painted "U. S. B. M. 1231.1"..... | 1, 229. 57 |
| T. 136 N., R. 44 W., southwest corner of sec. 20, 7.8 miles northeast of Rothsay, at T road east; copper nail in corner fence post, painted "U. S. B. M. 1253.2"..... | 1, 251. 72 |
| T. 136 N., R. 44 W., southeast corner of sec. 30, 6.8 miles northeast of Rothsay, 30 feet north by 40 feet west of crossroads, 200 feet southwest of schoolhouse (district 59); iron post stamped "1249"..... | 1, 247. 597 |
| T. 136 N., R. 44 W., southeast corner of sec. 31, 5.8 miles northeast of Rothsay, 15 feet south by 20 feet west of crossroads, at north edge of large rock pile; chiseled ring on granite boulder, painted "U. S. B. M. 1308.0".... | 1, 306. 47 |
| T. 135 N., R. 44 W., northeast corner of sec. 7, 4.8 miles northeast of Rothsay, 45 feet west by 25 feet south of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1262.3"..... | 1, 260. 75 |
| T. 135 N., R. 44 W., northeast corner of sec. 18, 3.8 miles northeast of Rothsay, 20 feet west by 20 feet south of crossroads; iron post stamped "1312".. | 1, 310. 060 |
| T. 135 N., R. 44 W., northwest corner of sec. 20, 2.8 miles northeast of Rothsay, 25 feet south by 25 feet east of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1287.0"..... | 1, 285. 50 |
| T. 135 N., R. 44 W., northwest corner of sec. 19, 1.9 miles north of Rothsay, 25 feet south by 70 feet east of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1238.6"..... | 1, 237. 08 |
| Rothsay, 0.9 mile north of, southeast corner of sec. 24, T. 135 N., R. 45 W., 35 feet north by 30 feet west of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1218.4"..... | 1, 216. 91 |

BARRETT QUADRANGLE.

[Latitude, 45° 45'-46"; longitude, 95° 45'-46".]

From Thorsborg south along highway to county line at southeast corner of sec. 1,
T. 126 N., R. 42 W.

| | |
|--|-------------|
| Thorsborg, Grant County, Sanford Township, in NW. $\frac{1}{4}$ sec. 13, 110 meters north and 60 meters west of railway station, at southwest corner of pasture belonging to Henry Lajord, at northeast corner of crossroads, 10 meters east and 5 meters north of line of travel; iron pipe (C. & G. S. b. m. V 1) .. | 1, 203. 584 |
| T. 129 N., R. 42 W., in southeast corner of SW. $\frac{1}{4}$ sec. 24, at northwest corner of crossroads, 5 feet west of line of travel, on granite boulder; chiseled square, marked "1247" | 1, 245. 51 |
| T. 129 N., R. 42 W., in southwest corner of SE. $\frac{1}{4}$ sec. 36, 25 feet north by 25 feet east of center of crossroads; iron post stamped "1212" | 1, 211. 070 |
| Barrett, in front of station; top of east rail, marked on face of platform "1168.0" | 1, 166. 6 |
| Barrett, in south end of west doorsill (sandstone) of the Barrett public school building; aluminum tablet stamped "1168" | 1, 166. 910 |
| T. 128 N., R. 41 W., in northwest corner of sec. 31, 25 feet north by 25 feet east of center of intersection of T road east; iron post stamped "1179" .. | 1, 177. 990 |
| T. 127 N., R. 41 W., in northwest corner of sec. 6, at crossroads; top of iron section-corner post | 1, 173. 76 |
| T. 127 N., R. 41 W., in northwest corner of sec. 18, 30 feet east by 30 feet south of point on line of travel; iron post stamped "1183" | 1, 182. 031 |
| T. 127 N., R. 41 W., in northwest corner of sec. 31, 40 feet east by 25 feet south of center of T road east; iron post stamped "1178" | 1, 176. 833 |

From southeast corner of sec. 32, T. 127 N., R. 41 W., east along county-line road 3 miles, thence north along highway to Erdahl.

| | |
|--|-------------|
| T. 127 N., R. 41 W., in southeast corner of sec. 32, 30 feet west by 20 feet south of center of crossroads; iron post stamped "1133" | 1, 231. 570 |
| T. 127 N., R. 41 W., in southeast corner of sec. 35, 25 feet west by 25 feet north of crossroads; iron post stamped "1232" | 1, 230. 731 |
| T. 127 N., R. 41 W., in center of south side of SE. $\frac{1}{4}$ sec. 14, 25 feet west by 25 feet north of center of T road west; iron post stamped "1193" | 1, 192. 094 |
| Hoffman, in south end of west doorsill (sandstone) of the Hoffman public school building; aluminum tablet stamped "1256" | 1, 254. 511 |
| Hoffman, 1.4 miles north of, on west side of road, 10 feet from center of line of travel; point on granite boulder | 1, 232. 40 |
| T. 128 N., R. 41 W., in northeast corner of SE. $\frac{1}{4}$ sec. 26, 55 feet south of center of line of travel at right angle in road; iron post stamped "1234" .. | 1, 233. 033 |
| T. 128 N., R. 41 W., in northwest corner of sec. 14, 20 feet east by 20 feet south of center of T road east; iron post stamped "1252" | 1, 250. 603 |
| T. 129 N., R. 41 W., in southwest corner of sec. 25, 35 feet east by 30 feet north of center of T road east; iron post stamped "1236" | 1, 234. 531 |
| Erdahl (Cork post office), Grant County, on land of T. Tobiasson, of Ashby, at the east line of main street, 58 meters south of railway at a point 70 meters west of station, 7 meters east of line of travel, 17 meters northeast of frame store of A. J. Okelgren, 24 meters south of grain elevator; iron post (C. & G. S. b. m. U 1) | 1, 265. 371 |

From southwest corner of sec. 19, T. 127 N., R. 41 W., west along highway 1.5 miles, thence south 1 mile, thence west 3 miles, thence north to Elbow Lake.

| | |
|---|------------|
| T. 127 N., R. 42 W., near quarter corner north side of sec. 26, on stone foundation of schoolhouse (district 16), at northeast corner; chiseled square .. | 1, 186. 68 |
|---|------------|

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|---|-------------|
| T. 127 N., R. 42 W., in northeast corner of sec. 34, 35 feet west by 35 feet south of center of crossroads; iron post stamped "1197"..... | 1, 195. 385 |
| T. 127 N., R. 42 W., in southeast corner of sec. 30, in southeast corner of school lot, 30 feet west by 30 feet north of center of crossroads; iron post stamped "1147"..... | 1, 145. 202 |
| T. 127 N., R. 42 W., in northwest corner of sec. 20, 35 feet south by 38 feet east of center of crossroads, on stone boulder; chiseled square..... | 1, 151. 58 |
| T. 127 N., R. 42 W., 40 feet west by 25 feet south of center of crossroads; iron post stamped "1146"..... | 1, 144. 157 |
| T. 128 N., R. 42 W., in northwest corner of sec. 32, 30 feet east by 20 feet south of center of crossroads; iron post stamped "1156"..... | 1, 154. 685 |
| T. 128 N., R. 42 W., in northeast corner of sec. 18, 25 feet west by 20 feet south of center of crossroads, near Huset Church; iron post stamped "1178"..... | 1, 175. 977 |
| T. 129 N., R. 42 W., in southeast corner of sec. 29, 30 feet west by 20 feet north of center of crossroads; iron post stamped "1162"..... | 1, 160. 644 |
| Elbow Lake, Grant County, in north end of south doorsill (sandstone) of First National Bank Building, 1.8 meters north of south side of building, 0.1 meter east of front edge of sill, 0.08 meter south of brickwork, 0.4 meter above sidewalk, 0.5 meter north of center of doorway; red metal disk (C. & G. S. b. m. X 1)..... | 1, 212. 508 |

BATTLE LAKE QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 95° 30'-95° 45'.]

From point 5.2 miles east of Underwood east along Great Northern Ry. to Battle Lake, thence north along highways to southwest corner of sec. 16, T. 134 N., R. 40 W.

| | |
|--|-------------|
| Underwood, 5.2 miles east of, 25 feet south of railroad, 50 feet east of wagon road, at private crossing; highest point on granite rock..... | 1, 338. 46 |
| Battle Lake, southeast corner of yard of new schoolhouse; iron post stamped "1373 Prim. Trav. Sta. No. 14" (on unchecked spur line)..... | 1, 371. 836 |
| T. 133 N., R. 40 W., 20 feet east by 25 feet north of southwest corner of SE. $\frac{1}{4}$ sec. 20, 3.2 miles northwest of Battle Lake; iron post stamped "1338"..... | 1, 386. 776 |
| T. 133 N., R. 40 W., near southeast corner of NW. $\frac{1}{4}$ sec. 9; iron post stamped "Prim. Trav. Sta. No. 15, 1363"..... | 1, 361. 183 |
| T. 133 N., R. 40 W., bridge over Red River at outlet of Ottertail Lake, on northeast corner, north of first bolt head..... | 1, 325. 66 |
| Red River, under bridge; surface of water Nov. 1, 1910..... | 1, 317. 8 |
| T. 134 N., R. 40 W., at T road west, on west end of Ottertail Lake; iron post stamped "Prim. Trav. Sta. No. 16, 1330"..... | 1, 328. 998 |
| T. 134 N., R. 40 W., near southwest corner of sec. 16, in southwest corner of church lot; iron post stamped "Prim. Trav. Sta. No. 17, 1368"..... | 1, 366. 910 |
| From Amor northeast to point near Richville, thence southeast to Ottertail, thence south to Vining, thence west to Battle Lake. | |
| Amor, near southwest corner of sec. 16, T. 134 N., R. 40 W., southwest corner of church lot; iron post stamped "Prim. Trav. Sta. No. 17, 1368"..... | 1, 366. 910 |
| T. 134 N., R. 40 W., northwest corner of sec. 22; copper nail in telephone pole, marked "1356.2"..... | 1, 354. 74 |
| T. 134 N., R. 40 W., northeast corner of NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 15, on east side of road, opposite lane leading to Mrs. Young's house; copper nail in fence post, marked "1355.0"..... | 1, 353. 54 |
| T. 134 N., R. 40 W., northwest corner of sec. 11, at T road east, near Dead River; iron post stamped "1343"..... | 1, 341. 125 |

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| T. 134 N., R. 40 W., near northeast corner of sec. 2, at crossroads south of Basswood store; copper nail in telephone pole, marked "1362.1"..... | 1,360.67 | Feet. |
| T. 135 N., R. 40 W., 80 rods south of northwest corner of sec. 36, 250 feet south of P. L. Bunis's house, west side of road; chiseled square on granite bowlder, marked "1354.6"..... | 1,353.11 | |
| T. 135 N., R. 40 W., near center of sec. 25, 40 feet southeast of forks; copper nail in root of elm tree, marked "1362.2"..... | 1,360.74 | |
| T. 135 N., R. 39 W., 80 rods east of northwest corner of sec. 30, 2.7 miles southwest of Richville, 100 feet northeast of church used as schoolhouse at T road west; iron post stamped "1358"..... | 1,356.329 | |
| Richville, 1.5 miles southwest of, 80 rods west of northeast corner of sec. 19, T. 135 N., R. 39 W.; copper nail in corner fence post, marked "1379.2" .. | 1,377.72 | |
| Richville, 0.6 mile southeast of, 80 rods north of southeast corner of sec. 17, T. 135 N., R. 39 W., on west side of track; copper nail in crossing sign post, marked "1357.6"..... | 1,356.06 | |
| T. 135 N., R. 39 W., in sec. 21, 1.8 miles southeast of Richville, 0.3 mile northwest of center of large curve, on east side of track; copper nail in telegraph pole, marked "1334.5"..... | 1,333.00 | |
| T. 135 N., R. 39 W., near northwest corner of sec. 27, east side of track, north of road crossing; copper nail in telegraph pole, marked "1332.6"..... | 1,331.09 | |
| Ottertail, 2.9 miles northwest of, 1,200 feet north of bridge over Red River, on west side of track; iron post stamped "1345"..... | 1,343.270 | |
| Ottertail, 1.8 miles northwest of, 0.4 mile north of road crossing, on east side of track; copper nail in pole, marked "1348.4"..... | 1,346.94 | |
| T. 134 N., R. 38 W., near west quarter corner of sec. 11, 100 feet south of private crossing, on east side of track, 1 mile northwest of Ottertail; copper nail in pole, marked "1337.8"..... | 1,336.38 | |
| Ottertail, at southwest corner of station; iron post stamped "1355"..... | 1,353.098 | |
| Ottertail, 1.1 miles southeast of, in sec. 14, T. 134 N., R. 39 W., on east side of track, 7 telegraph poles south of hedge; copper nail in pole, marked "1334.9"..... | 1,331.46 | |
| T. 134 N., R. 39 W., in sec. 24, 2.2 miles southeast of Ottertail, on east side of track; copper nail in telegraph pole, marked "1335.3"..... | 1,333.85 | |
| T. 134 N., R. 39 W., east quarter corner of sec. 24, 2.5 miles southeast of Ottertail, at crossing, on west side of track, about 60 feet north of bridge; iron post stamped "1329"..... | 1,327.251 | |
| Ottertail, 3.5 miles southeast of, 0.5 mile west of southeast corner of sec. 30, T. 134 N., R. 38 W., 50 feet north of road crossing; copper nail in telegraph pole, marked "1373.1"..... | 1,371.68 | |
| T. 134 N., R. 38 W., 0.5 mile north of southeast corner of sec. 31, 4.4 miles southeast of Ottertail, 100 feet south of crossing; iron post stamped "1392" .. | 1,390.55 | |
| Vining, 8.3 miles northeast of, east quarter corner of sec. 6, T. 133 N., R. 38 W.; copper nail in corner fence post, marked "1421.2"..... | 1,419.71 | |
| T. 133 N., R. 38 W., 80 rods north of southwest corner of sec. 8, near H. F. Vought's mailbox; copper nail in fence post, marked "1408.2"..... | 1,406.71 | |
| T. 133 N., R. 38 W., northwest corner of sec. 20; iron post stamped "1382" .. | 1,380.8 | |
| T. 133 N., R. 38 W., southwest corner of sec. 20, 200 feet east of schoolhouse (district 152); copper nail in telephone pole, marked "1356.5"..... | 1,355.07 | |
| Vining, 3.6 miles northeast of, south quarter corner of sec. 29, T. 133 N., R. 38 W., at foot of Mrs. Sammeker's mailbox; iron spike, marked "1392.5" .. | 1,391.04 | |
| T. 133 N., R. 38 W., southwest corner of sec. 32; iron post stamped "1420" .. | 1,418.31 | |
| T. 132 N., R. 38 W., near center of sec. 6, 45 feet north of railroad crossing; copper nail in telephone pole, marked "1390.9"..... | 1,389.51 | |

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| Vining, 150 feet northeast of station, on north side of track; iron post stamped "1389" | Feet. 1,388.067 |
| T. 132 N., R. 39 W., center of sec. 11, 0.6 mile west of Vining, on south side of track at crossing; copper nail in pole, marked "1389.1" | 1,387.70 |
| T. 132 N., R. 39 W., center of sec. 10, 1.6 miles west of Vining, southeast corner of railroad crossing on private drive; copper nail in pole, marked "1363.7" | 1,362.26 |
| T. 132 N., R. 39 W., sec. 9, in northwest corner of bridge 24; iron bolt, marked "1344.5" | 1,343.11 |
| T. 132 N., R. 39 W., 0.25 mile south of northwest corner of sec. 9, on north side of railroad crossing; iron post, stamped "1361" | 1,359.520 |
| T. 132 N., R. 39 W., sec. 5, 150 feet west of private road, 1 mile east of Clitheral; copper nail in pole, marked "1351.6" | 1,350.19 |
| Clitheral, south of crossing, east of station; copper nail in telegraph pole, marked "1350.90" | 1,349.48 |
| T. 132 N., R. 40 W., near east quarter corner of sec. 1, south of road crossing, 0.8 mile west of Clitheral; iron post, stamped "1367" | 1,365.774 |
| T. 132 N., R. 40 W., in sec. 2, 1.6 miles east of Battle Lake, five telegraph poles west of milepost 29; copper nail in pole, marked "1354.1" | 1,352.66 |
| Battle Lake, 0.6 mile east of, near east quarter corner of sec. 3, 1,200 feet east of "Battle Lake 1 mile" post; copper nail, marked "1344.1" | 1,342.66 |
| Battle Lake, opposite Northern Pacific Ry. station, south side of track; copper nail in telegraph pole, marked "1354.5" | 1,353.11 |
| Battle Lake, southeast corner of new schoolhouse yard; iron post, stamped "Prim. Trav. Sta. No. 14, 1373" | 1,371.836 |

From Battle Lake via Balmoral to Ottartail.

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| Battle Lake, 0.7 mile north of, near west quarter corner of sec. 34, T. 133 N., R. 40 W., opposite ball park; copper nail in pole, marked "1344.6" | 1,343.14 |
| T. 133 N., R. 40 W., at center of sec. 27, on west side of road; copper nail in telephone pole, marked "1343.0" | 1,341.59 |
| T. 133 N., R. 40 W., north quarter corner of sec. 27; copper nail in telephone pole, marked "1371.2" | 1,369.78 |
| T. 133 N., R. 40 W., near north quarter corner of sec. 26, on south side of road at T road north; iron post, stamped "1357" | 1,356.097 |
| T. 133 N., R. 40 W., near east quarter corner of sec. 24, about 1,000 feet east of A. G. Myhre's house, at edge of woods, on north side of road; copper nail in root of large tree, marked "1345.8" | 1,344.41 |
| T. 133 N., R. 39 W., near northeast corner of sec. 19, 350 feet east of turn in road, 800 feet north of house on D. Berg's farm, on south side of road; copper nail in stump, marked "1347.66" | 1,346.23 |
| T. 133 N., R. 39 W., southeast corner of sec. 18, in front of W. N. Wilkin's stock farm; iron post stamped "1368" | 1,366.466 |
| T. 133 N., R. 39 W., 80 rods northeast of southwest corner of sec. 16; copper nail in corner fence post, marked "1362.6" | 1,361.20 |
| T. 133 N., R. 39 W., 80 rods northeast of southwest corner of sec. 4, on west side of road; copper nail in corner post of J. C. Kimber's garden, marked "1356.0" | 1,354.57 |
| T. 133 N., R. 39 W., 80 rods west of center of sec. 4, at T road east, east end of Lake Ethel; iron post stamped "1358" | 1,356.431 |
| T. 133 N., R. 39 W., northwest corner of sec. 4, at T road west; copper nail in telephone pole, marked "1376.9" | 1,375.44 |
| T. 134 N., R. 39 W., southwest corner of sec. 32, at T road north; copper nail in fence post, marked "1333.2" | 1,331.75 |

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| T. 134 N., R. 39 W., center of sec. 31, 0.25 mile north of Balmoral, at forks of road; iron post stamped "1346"..... | 1, |
| T. 134 N., R. 39 W., 80 rods south of north quarter corner of sec. 32, opposite schoolhouse (District 131); copper nail in pole, marked "1372.8"..... | 1, |
| T. 134 N., R. 39 W., 600 feet east of west quarter corner of sec. 28, near II. Wiebe's house; copper nail in fence post, marked "1347.8"..... | 1, |
| T. 134 N., R. 39 W., west quarter corner of sec. 27; iron post stamped "Prim. Trav. Sta. No. 26, 1356"..... | 1, |
| T. 134 N., R. 39 W., 600 feet east of south quarter corner of sec. 22, in front of cemetery; copper nail in hitch rack, marked "1370.3"..... | 1, |
| T. 134 N., R. 39 W., north quarter corner of sec. 22, at T road east; copper nail in corner fence post, marked "1356.3"..... | 1, |
| T. 134 N., R. 39 W., south quarter corner of sec. 14, at T road north; copper nail in corner fence post, marked "1348.5"..... | 1, |
| Ottertail, at southwest corner of station; iron post stamped "1355"..... | 1, |

CHOKIO QUADRANGLE.

[Latitude, 45° 30'-45° 45'; longitude, 96°-96° 15'.]

From southwest corner of sec. 2, T. 126 N., R. 44 W., west to sec. 4, T. 126 N., R. 44 W.

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| T. 126 N., R. 44 W., in southwest corner of sec. 2, 35 feet east by 35 feet north of center of crossroads, 320 feet northeast of schoolhouse; iron post stamped "1080"..... | 1, |
| T. 126 N., R. 44 W., in southeast corner of sec. 4, 220 feet northwest of section corner in base of 8-inch cottonwood tree; spike..... | 1, |

From northeast corner of sec. 36, T. 125 N., R. 43 W., north along highway to southeast corner of sec. 12, T. 126 N., R. 43 W.

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| T. 125 N., R. 43 W., in northeast corner of sec. 36, 45 feet west by 30 feet south of 4-inch by 12-inch rock near corner, 60 feet north of center of road; iron post stamped "1110"..... | 1, |
| T. 125 N., R. 42 W., in northwest corner of sec. 18, 30 feet east by 65 feet south of center of crossroads, in top of concrete post; aluminum tablet stamped "1105"..... | 1, |
| Donnelly, on main line, opposite signal in front of station, 1 foot south of joint of east rails, on top of rail..... | 1, |
| Donnelly, at street crossing, 95 feet south of post office, west side of Main Street, at northeast entrance to park, in top of concrete post; aluminum tablet stamped "1131"..... | 1, |
| T. 126 N., R. 43 W., in southeast corner of sec. 12, 40 feet west by 20 feet north of center of crossroads, 210 feet west of church, in top of concrete post; aluminum tablet stamped "1144"..... | 1, |

From southwest corner of sec. 19, T. 124 N., R. 42 W., to northwest corner of sec. 4, T. 126 N., R. 44 W.

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| T. 124 N., R. 42 W., in southwest corner of sec. 19, 25 feet east by 35 feet north of center line of travel at crossroads, in top of concrete post; aluminum tablet stamped "1158"..... | 1, |
| T. 124 N., R. 43 W., northwest corner of NE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 25, 3 feet from trunk of tree and 35 feet west of center line of travel at jog around lake; nail in root of 32-inch tree..... | 1, |
| T. 124 N., R. 43 W., southwest corner of sec. 22, 25 feet north by 25 feet east of center line of travel at crossroads, in top of concrete post; aluminum tablet stamped "1149"..... | 1, |

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| T. 124 N., R. 43 W., near northwest corner of sec. 32; iron post stamped "1156" | Feet. 1, 154. 489 |
| T. 124 N., R. 44 W., near southeast corner of sec. 25; nailhead in west end of small bridge painted white..... | 1, 151. 22 |
| T. 124 N., R. 44 W., southwest corner of sec. 26, in top of concrete post; aluminum tablet stamped "1157"..... | 1, 155. 751 |
| T. 124 N., R. 44 W., near southwest corner of sec. 29, in top of concrete post; aluminum tablet stamped "1163"..... | 1, 162. 032 |
| T. 124 N., R. 44 W., 200 feet northeast of southwest corner of sec. 20; chiseled square on top of large stone..... | 1, 157. 00 |
| T. 124 N., R. 44 W., near southeast corner of sec. 7; iron post stamped "1143"..... | 1, 141. 587 |
| T. 125 N., R. 44 W., near southwest corner of sec. 32; iron post stamped "1124"..... | 1, 122. 849 |
| T. 125 N., R. 44 W., near southeast corner of sec. 18; iron post stamped "1102"..... | 1, 100. 768 |
| T. 125 N., R. 44 W., northeast corner of sec. 6; iron post stamped "1073".... | 1, 071. 428 |
| T. 126 N., R. 44 W., near northeast corner of sec. 19; iron post stamped "1064"..... | 1, 062. 629 |
| T. 126 N., R. 44 W., near northwest corner of sec. 4, 30 feet east by 25 feet south of center of crossroads; iron post stamped "1057"..... | 1, 055. 887 |
| From southwest corner of sec. 2, T. 126 N., R. 44 W., to southwest corner of sec. 22, T. 124 N., R. 43 W. | |
| T. 126 N., R. 44 W., southwest corner of sec. 2, 35 feet east by 35 feet north of center line of travel at crossroads, 320 feet northeast of schoolhouse; iron post stamped "1080"..... | 1, 078. 490 |
| T. 126 N., R. 43 W., near northwest corner of sec. 7, in top of concrete post; aluminum tablet stamped "1089"..... | 1, 087. 924 |
| T. 126 N., R. 43 W., southwest corner of sec. 7; top of iron pipe..... | 1, 089. 449 |
| T. 126 N., R. 43 W., near northwest corner of sec. 20, in top of concrete post; aluminum tablet stamped "1089"..... | 1, 087. 568 |
| T. 126 N., R. 43 W., near northeast corner of sec. 32, in top of concrete post; aluminum tablet stamped "1110"..... | 1, 108. 918 |
| T. 125 N., R. 43 W., near southeast corner of sec. 8; iron post stamped "1122"..... | 1, 120. 981 |
| T. 125 N., R. 43 W., near corner of secs. 16, 17, 20, and 21; chiseled square on stone..... | 1, 123. 21 |
| T. 125 N., R. 43 W., 1,320 feet north of northwest corner of sec. 28; chiseled square on large stone..... | 1, 121. 94 |
| T. 125 N., R. 43 W., near center of SE. $\frac{1}{4}$ sec. 32, in top of concrete post at tower; aluminum tablet stamped "1123"..... | 1, 121. 346 |
| T. 124 N., R. 43 W., in northwest corner of sec. 10, 30 feet south by 40 feet east of center line of travel at road intersection, 0.25 mile west of Alberta, in top of concrete post; aluminum tablet stamped "1109"..... | 1, 107. 405 |

DETROIT LAKE QUADRANGLE.

[Latitude, 46° 45'-47°; longitude, 95° 45'-96°.]

From point near Frasee west along highway to Shoreham.

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| T. 138 N., R. 40 W., 0.2 mile east of west quarter corner of sec. 20, 200 feet southwest of D. Graham's house; copper nail in telephone pole, marked "1409.4"..... | 1, 408. 22 |
| T. 138 N., R. 40 W., northwest corner of sec. 19, at angle in road southeast, 5 feet west of road; copper nail in stump, marked "1365.4"..... | 1, 364. 19 |

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| T. 138 N., R. 41 W., near center of sec. 24, about 200 feet northeast of John Munson's house, on south side of road; iron post stamped "1401"..... | Feet. 1,399.560 |
| T. 138 N., R. 41 W., northwest corner of sec. 23, at T road west; copper nail in telephone pole, marked "1386.0"..... | 1,384.82 |
| T. 138 N., R. 41 W., northwest corner of sec. 22, 400 feet northeast of Lakeview schoolhouse, on east side of railroad and public highway at cross-roads; iron post stamped "1355"..... | 1,353.605 |
| T. 138 N., R. 41 W., 600 feet north of northeast corner of sec. 21, at Y road; copper nail in telephone pole, marked "1344.8"..... | 1,343.57 |
| T. 138 N., R. 41 W., near center of sec. 20, at T road north; copper nail in telephone pole, marked "1340.0"..... | 1,338.78 |
| T. 138 N., R. 41 W., near center of sec. 19, near Dr. Neh Tronner's cottage, on south side of road; nail in stump, marked "1341.0"..... | 1,339.74 |

VERGAS QUADRANGLE.

[Latitude, 46° 30' -46° 45'; longitude, 95° 45' -96°.]

From point near Dent southwest along highway to point near Star Lake store.

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| Dent 1.1 miles west of, near northwest corner of sec. 33, T. 136 N., R. 40 W., south end of Big McDonald Lake, north side of road; copper nail in telephone pole, marked "1359.7"..... | 1,358.26 |
| T. 136 N., R. 40 W., near northwest corner of sec. 32, at turn in road; copper nail in telephone pole, marked "1393.9"..... | 1,392.43 |
| T. 136 N., R. 40 W., 75 feet east of northwest corner of sec. 31, on north side of road; iron post stamped "1384"..... | 1,282.803 |
| T. 136 N., R. 41 W., 500 feet northwest of southeast corner of sec. 36, north side of lake, on township corner; copper nail in telephone pole, marked "1350.9"..... | 1,349.48 |
| T. 135 N., R. 40 W., about 350 feet south of west quarter corner of sec. 6; copper nail in telephone pole, painted "U. S. B. M. 1358.5"..... | 1,357.05 |
| T. 135 N., R. 40 W., 1,000 feet southeast of northwest corner of sec. 7; 15 feet east of road, 10 feet north of drive leading to H. Wishnach's house; iron post stamped "1336"..... | 1,334.272 |
| T. 135 N., R. 40 W., near northwest corner of sec. 18, 0.3 mile north of forks of road; copper nail in telephone pole, painted "U. S. B. M. 1334.7"..... | 1,333.26 |
| T. 135 N., R. 41 W., 0.25 mile north of south quarter corner of sec. 12, in northeast corner of bridge over Star Lake outlet; copper nail marked "1334.1"..... | 1,332.69 |
| T. 135 N., R. 41 W., 200 feet north of southwest corner of sec. 13; iron post stamped "1348 Minn"..... | 1,346.884 |

From point near Star Lake north along highway to Vergas, thence southeast 2.8 miles.

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| T. 135 N., R. 41 W., near east quarter corner of sec. 17, 4.4 miles northwest of Star Lake; copper nail in southwest corner of bridge, marked "1346.3"..... | 1,344.89 |
| T. 135 N., R. 41 W., northeast corner of sec. 17, 4.9 miles northwest of Star Lake, 45 feet southwest of T road south; copper nail in root of stump, marked "1389.1"..... | 1,387.69 |
| T. 135 N., R. 41 W., 0.25 mile west of northeast corner of sec. 18, on south side of road; iron post stamped "1394"..... | 1,392.914 |
| T. 135 N., R. 41 W., center of sec. 7, at T road west, at north side of triangle; copper nail in telephone pole, marked "1360.5"..... | 1,359.15 |
| T. 135 N., R. 41 W., near northeast corner of sec. 7, on north side of road, near blacksmith shop; copper nail in telephone pole, marked "1371.4"..... | 1,370.06 |
| T. 135 N., R. 41 W., northeast corner of sec. 8, at T road north, on south side of road; iron post stamped "1361 Minn"..... | 1,359.158 |

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| T. 135 N., R. 41 W., northwest corner of sec. 4, at T road east; copper nail in telephone pole, marked "1366.7" | Feet. 1,365.38 |
| T. 136 N., R. 41 W., northeast corner of sec. 32, northeast corner of school-house (district 166), in baseboard; copper nail marked "1420.2" | 1,418.84 |
| T. 136 N., R. 41 W., west quarter corner of sec. 28, at T road west, on east side of road; iron post stamped "1403" | 1,401.700 |
| T. 136 N., R. 41 W., north quarter corner of sec. 28, at T road north, on south side of road; copper nail in root of tree marked "1405.4" | 1,404.03 |
| T. 136 N., R. 41 W., north quarter corner of sec. 21, at T road south; copper nail in stump, marked "1372.8" | 1,371.49 |
| T. 136 N., R. 41 W., northwest corner of sec. 15, at northwest corner of graveyard; iron post stamped "1388" | 1,386.356 |
| T. 136 N., R. 41 W., 0.25 mile south of northeast corner of sec. 4, 30 feet east of forks in road; chiseled point on granite boulder marked "U.S.B.M. 1402.5" | 1,400.21 |
| T. 137 N., R. 41 W., east quarter corner of sec. 34, on west side of forks of road; iron post stamped "1390" | 1,387.358 |
| T. 137 N., R. 41 W., near northeast corner of sec. 35, at forks of road, on west side of road; copper nail in telephone pole marked "1380.9" | 1,378.63 |
| Vargas, 150 feet north of station, on south side of public highway; iron post stamped "1400" | 1,398.498 |
| T. 137 N., R. 41 W., east quarter corner of sec. 25, on east side of track; copper nail in crossing sign, marked "1400.9" | 1,398.64 |
| T. 137 N., R. 40 W., in sec. 31, 16 telegraph poles west of milepost 199, at private crossing; copper nail in telegraph pole marked "1393.6" | 1,392.29 |
| T. 137 N., R. 40 W., near center of sec. 32, 40 feet east of overhead railroad bridge, near Lake Sybil; iron post stamped "1366" | 1,364.917 |
| From Vargas northwest along Soo Line and Northern Pacific Ry. to point near Shoreham. | |
| Vargas, 150 feet north of station, on south side of public highway; iron post stamped "1400" | 1,398.498 |
| T. 137 N., R. 41 W., west quarter corner of sec. 24, six telegraph poles east of milepost 202; copper nail in pole marked "1437.9" | 1,436.64 |
| T. 137 N., R. 41 W., 0.25 mile east of northwest corner of sec. 23, at public road crossing; copper nail in crossing post, marked "1421.3" | 1,420.07 |
| T. 137 N., R. 41 W., SE. $\frac{1}{4}$ sec. 10, 100 feet west of public road crossing; iron post stamped "1399" | 1,398.079 |
| T. 137 N., R. 41 W., 0.25 mile west of northeast corner of sec. 10, 0.4 mile west of milepost 205; copper nail in pole marked "1407.6" | 1,406.34 |
| T. 138 N., R. 41 W., south quarter corner of sec. 34, at public-road crossing, on east side of track and south side of road; iron post stamped "1372" | 1,370.499 |
| T. 138 N., R. 41 W., near north quarter corner of sec. 34, on east side of culvert G 207 P, in timber of culvert; copper nail marked "1338.2" | 1,336.94 |
| T. 138 N., R. 41 W., near northwest corner of sec. 27, at public-road crossing; copper nail in crossing signpost, marked "1352.9" | 1,351.70 |
| From T. 138 N., R. 42 W., sec. 33, northeast to point near Shoreham. | |
| T. 138 N., R. 42 W., northeast corner of sec. 33, at T road west; iron post stamped "Prim. Trav. Sta. No. 17, 1372, Minn., 1911" | 1,370.617 |
| T. 138 N., R. 42 W., northeast corner of sec. 27, at T road north, at old Lake Eunice post office; copper nail in telephone pole marked "1346.8" | 1,345.51 |
| T. 138 N., R. 42 W., southeast corner of sec. 23, at crossroads; copper nail in telephone pole marked "1386.9" | 1,385.60 |

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| T. 138 N., R. 41 W., 0.2 mile north of northwest corner of sec. 30, at T road east; iron post stamped "Prim. Trav. Sta. No. 16, 1357 Minn., 1911" .. | 1, 356. 131 |
| Frazee, 2.7 miles northwest of, east quarter corner of sec. 29, T. 138 N., R. 40 W., on north side of road at T road south; iron post stamped "1396". | 1, 395. 233 |
| T. 138 N., R. 40 W., center of northeast quarter of sec. 29, northwest corner in base board of schoolhouse; copper nail marked "1403.3"; | 1, 402. 13 |

From point 1.4 miles southwest of Shoreham south to sec. 20, T. 135 N., R. 42 W.

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| Shoreham, 1.4 miles southwest of, 0.2 mile north of northwest corner of sec. 30, T. 138 N., R. 41 W., at T road east; iron post stamped "Prim. Trav. Sta. No. 16, 1357" | 1, 356. 131 |
| T. 138 N., R. 41 W., near southwest corner of sec. 30, 250 feet northwest of Roosevelt Beach, on east side of road, on shore of Lake Melissa; copper nail in telephone pole, marked "1337.3" | 1, 336. 06 |
| Bucks Mills, near west quarter corner of sec. 31, T. 138 N., R. 41 W., 70 feet northeast of cement mill, on south side of road; iron post stamped "1336" | 1, 334. 987 |
| T. 137 N., R. 41 W., 0.2 mile north of center of sec. 6, 0.8 mile south of Bucks Mills, 300 feet south of Five Points, at T road east; copper nail in telephone pole, marked "1359.7" | 1, 358. 46 |
| T. 137 N., R. 41 W., about 0.25 mile east of northwest corner of sec. 7, 1.8 miles south of Bucks Mills, at forks of road; copper nail in telephone pole marked "1361.9" | 1, 360. 63 |
| T. 137 N., R. 41 W., 300 feet north of northeast corner of NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 18, 300 feet northeast of schoolhouse, on west side of road; chiseled point on granite rock marked "1435.7" | 1, 434. 48 |
| T. 137 N., R. 41 W., 0.2 mile south of northeast corner of NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 18, 0.2 mile south of schoolhouse, on shore of School Lake, on west side of road; iron post stamped "1435" | 1, 433. 390 |
| T. 137 N., R. 41 W., northeast corner of sec. 19, at T road south; copper nail in telephone pole, marked "1453.7" | 1, 452. 43 |
| T. 137 N., R. 41 W., near west quarter corner of sec. 19, at T road south; copper nail in telephone pole, marked "1448.4" | 1, 447. 14 |
| T. 137 N., R. 41 W., near northwest corner of sec. 30, 4.8 miles northeast of Patterson bridge, 400 feet north of T. Erickson's mail box, on east side of road; chiseled point on granite boulder marked "1474.6" | 1, 472. 37 |
| T. 137 N., R. 41 W., 0.25 mile north of northwest corner of sec. 31, 4.2 miles northeast of Patterson bridge, on east side of road, at gate to J. Trosdahl's house; iron post stamped "1432" | 1, 430. 714 |
| T. 137 N., R. 42 W., southeast corner of sec. 36, 2.4 miles northeast of Patterson's bridge, at angle in road northwest; copper nail in telephone pole painted "U. S. B. M. 1472.2" | 1, 470. 96 |
| T. 137 N., R. 42 W., 450 feet east of south quarter corner of sec. 35, 1.3 miles from Patterson's bridge, 450 feet east of T road north, on north side of road; iron post stamped "1330" | 1, 328. 444 |
| T. 136 N., R. 42 W., west quarter corner of sec. 3, 470 feet northwest of Patterson's bridge, at forks of road; copper nail in A. Thompson's mail box, marked "1320.0" | 1, 318. 76 |
| Lake Lizzie; surface of water Sept. 7, 1911 | 1, 311. 9 |
| T. 136 N., R. 42 W., 0.25 mile west of east quarter corner of sec. 9, 1.1 miles south of Patterson's bridge, at forks of road; copper nail in telephone pole, marked "1321.6" | 1, 320. 29 |
| T. 136 N., R. 42 W., near southeast corner of sec. 10, 0.9 mile west of old Lida post office; copper nail in telephone pole, marked "1382.8" | 1, 381. 50 |

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|---|---------------------|
| T. 136 N., R. 42 W., 90 feet west of north quarter corner of sec. 14, 530 feet northwest of old Lida post office, at T road south; iron post stamped "1324" set near signboard..... | Feet. 1, 322. 30 |
| T. 136 N., R. 42 W., northwest corner of sec. 24, 1.1 miles south of old Lida post office; nail in J. P. Sturgis's mail box, marked "1364.1"..... | 1, 362. 84 |
| T. 136 N., R. 42 W., about center of NE. $\frac{1}{4}$ sec. 26, 0.4 mile south of A. Moberg's house, on east side of road; copper nail in root of basswood tree, marked "1345.3"..... | 1, 344. 10 |
| T. 136 N., R. 42 W., 0.25 mile north of south quarter corner of sec. 26, 800 feet south of B. P. Pierce's house, on east side of road, near gate to pasture; iron post stamped "1481"..... | 1, 479. 902 |
| T. 136 N., R. 42 W., 0.25 mile east of southwest corner of sec. 27, 1.2 miles east of Stoney Bar, at gate leading to Henry Drayton's, on north side of road; copper nail in gate post, marked "1376.9"..... | 1, 375. 64 |
| T. 136 N., R. 42 W., near west quarter corner of sec. 33, at Stoney Bar, near Nick Stergin's mail box; iron post stamped "Prim. Trav. Sta. No. 1, 1326 Minn. 1911"..... | 1, 324. 920 |
| T. 136 N., R. 42 W., near east quarter corner of sec. 33, 0.9 mile southeast of Stoney Bar; copper nail in John A. Johnson's mail box, marked "1369.3"..... | 1, 368. 09 |
| T. 135 N., R. 42 W., near center of NE. $\frac{1}{4}$ sec. 4, 300 feet northwest of John A. Johnson's house, on north side of road; copper nail in telephone pole, marked "1376.7"..... | 1, 375. 47 |
| T. 135 N., R. 42 W., near north quarter corner sec. 9, 75 feet south of C. H. Bakken's house; copper nail in telephone pole, marked "1335.9"..... | 1, 334. 76 |
| T. 135 N., R. 42 W., east quarter corner of sec. 8, at south end of Lake Lida, 150 feet west of forks of road, near C. H. Bakken's mail box; iron post stamped "1322"..... | 1, 320. 36 |

From point 4.3 miles northeast of Pelican Rapids to point near Patterson bridge.

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| T. 136 N., R. 42 W., near northeast corner of sec. 18, at T road south; iron post stamped "1322 Prim. Trav. Sta. No. 2, Minn"..... | 1, 320. 548 |
| T. 136 N., R. 42 W., about 0.25 mile north of northeast corner of sec. 17, on southeast corner of T road south; iron post stamped "1319"..... | 1, 318. 053 |

In sec. 23, T. 138 N., R. 41 W.

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|---|------------|
| T. 138 N., R. 41 W., center of SW. $\frac{1}{4}$ sec. 23, at forks of road; copper nail in telephone pole, marked "1341.8"..... | 1, 340. 56 |
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FERGUS FALLS QUADRANGLE.

[Latitude, 46° 15'–46° 30'; longitude, 96°–96° 15'.]

From Fergus Falls south along highways 2.5 miles.

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| Fergus Falls, at southeast corner of Lincoln Avenue and Mill Street, at northern entrance of Pickett Block (First State Bank building), in middle of building, 10 centimeters from north edge and 15 centimeters from east edge of doorstep; chiseled square (C. & G. S. b. m. Y 3)..... | 1, 194. 575 |
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From Fergus Falls north along highways to Erharts, thence east along highways to southeast corner of sec. 23, T. 135 N., R. 44 W.

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|--|-------------|
| Fergus Falls, 3.7 miles northeast of, near southeast corner of sec. 24, T. 133 N., R. 43 W., 30 feet south by 30 feet west of forks in road, 150 feet west of schoolhouse (district 80); iron post stamped "1313 Minn."..... | 1, 311. 168 |
| T. 133 N., R. 42 W., northwest corner of sec. 7, 150 feet northwest of H. Holdhusen's house, 20 feet east of road; iron post stamped "1300 Minn"..... | 1, 298. 520 |

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|---|----------------------|
| T. 134 N., R. 43 W., southeast corner of sec. 23, 55 feet north by 10 feet west of crossroads, at edge of C. F. Ladwig's farm; iron post stamped "1354 Minn"..... | Feet. 1, 352. 376 |
| T. 134 N., R. 43 W., southwest corner of sec. 23, 20 feet north of W. B. Chapin's mail box; spike in silver poplar tree marked "1317.6"..... | 1, 316. 20 |
| T. 134 N., R. 43 W., southwest corner of sec. 14, 35 feet northeast of B. Langer's mail box; iron post stamped "1345 Minn"..... | 1, 343. 515 |
| T. 134 N., R. 43 W., 800 feet west of northwest corner of sec. 14, 5 feet north of road; spike in stump, marked "1287.8"..... | 1, 286. 40 |
| T. 134 N., R. 43 W., 0.25 mile south of northwest corner of sec. 11, at foot of T. Svenegaard's mail box; iron stake marked "1336.5"..... | 1, 335. 07 |
| T. 134 N., R. 43 W., north quarter corner of sec. 11, 60 feet southwest of schoolhouse, 20 feet east of road; iron post stamped "1361 Minn"..... | 1, 359. 895 |
| T. 135 N., R. 43 W., northeast corner of sec. 34, 10 feet south of P. Ganen's mail box; iron post stamped "1431 Minn"..... | 1, 429. 720 |
| Erharts, on southwest corner of cement walk leading to A. O. Solom's house on main street; chiseled square..... | 1, 291. 82 |
| T. 135 N., R. 43 W., southwest corner of sec. 21, 1 mile west of Erharts, 200 feet north of schoolhouse (district 36); iron post stamped "1322 Minn.".. | 1, 320. 657 |
| T. 135 N., R. 44 W., southwest corner of sec. 25, 30 feet north of road near slough; iron post stamped "1281 Minn"..... | 1, 279. 357 |

From southeast corner of sec. 25, T. 135 N., R. 44 W., south along highways to Fergus Falls.

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|---|-------------|
| T. 134 N., R. 43 W., 1,600 feet southeast of southwest corner of sec. 6, 15 feet north by 30 feet west of forks in road, at edge of O. Zimmerman's farm; iron post stamped "1338 Minn"..... | 1, 336. 523 |
| T. 134 N., R. 44 W., southeast corner of sec. 24, 175 feet north by 20 feet west of forks in road; iron post stamped "1338 Minn"..... | 1, 336. 957 |
| T. 133 N., R. 43 W., northwest corner of sec. 5, 30 feet north by 25 feet east of forks in road; iron post stamped "1308"..... | 1, 306. 840 |
| Fergus Falls, 5 miles northwest of, on northeast corner of bridge over Pelican River; bolt marked "1193.5"..... | 1, 191. 97 |
| T. 134 N., R. 43 W., southeast corner of sec. 31, 20 feet north by 30 feet west of crossroads; iron post stamped "1231"..... | 1, 229. 414 |

From Fergus Falls east 2.5 miles along Great Northern Ry.

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|--|-------------|
| Fergus Falls, south of track, on southeast foundation of Great Northern Ry. water tank, at southeast corner of stone, in a horizontal surface; bottom of hole 25 millimeters square and 4 millimeters deep (C. & G. S. b. m. X ₃)..... | 1, 194. 270 |
| Fergus Falls, 2.5 miles east of, 9 feet north of railroad, 720 feet west of Electric Power Co.'s dam across Otter Tail River; highest point of granite rock..... | 1, 224. 88 |

From northeast corner of sec. 32, T. 135 N., R. 42 W., to north line of sec. 11, T. 134 N., R. 43 W.

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|--|-------------|
| T. 135 N., R. 42 W., 60 feet west by 25 feet south of northeast corner of sec. 32; highest point on granite rock..... | 1, 468. 54 |
| T. 135 N., R. 42 W., 20 feet north by 25 feet east of southwest corner of sec. 32; iron post stamped "1449"..... | 1, 447. 230 |
| T. 135 N., R. 43 W., southeast corner of sec. 36, 60 feet west by 25 feet north of; chiseled square on granite rock..... | 1, 482. 41 |
| T. 134 N., R. 43 W., north quarter corner of sec. 11, 60 feet southwest of schoolhouse, 20 feet east to public road; iron post stamped "1361 Minn".. | 1, 359. 895 |

From point near southwest corner of sec. 3, T. 133 N., R. 44 W., to point near southwest corner of sec. 4, T. 134 N., R. 44 W.

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|---|----------------------|
| French, T. 133 N., R. 44 W., 60 feet west of station, 60 feet north of North- ern Pacific Ry.; iron post stamped "1111"..... | Feet. 1, 109. 850 |
| T. 133 N., R. 44 W., 30 feet west of southeast corner of sec. 16; iron post stamped "1191"..... | 1, 189. 754 |
| T. 133 N., R. 44 W., 15 feet south of northwest corner of sec. 16; highest point on granite rock..... | 1, 142. 78 |
| T. 133 N., R. 44 W., 30 feet south by 30 feet east of northwest corner of sec. 8; iron post stamped "1124"..... | 1, 122. 894 |
| T. 134 N., R. 44 W., 20 feet south of northwest corner of sec. 31; top of granite rock..... | 1, 150. 75 |
| T. 134 N., R. 44 W., 45 feet west by 25 feet south of northeast corner of sec. 30; iron post stamped "1161"..... | 1, 159. 459 |

From T. 135 N., R. 44 W., sec. 25 north to T. 135 N., R. 44 W., sec. 23.

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| T. 135 N., R. 44 W., southwest corner of sec. 25, 30 feet north of road, near slough; iron post stamped "1281 Minn."..... | 1, 279. 357 |
| T. 135 N., R. 44 W., 0.2 mile south of north quarter corner of sec. 26, 0.2 mile south of white schoolhouse, 1,000 feet north of K. Nygaard's house, 100 feet west of small lake, at edge of clearing; copper nail in telephone pole, painted "U. S. B. M. 1290.3"..... | 1, 288. 92 |
| T. 135 N., R. 44 W., southeast corner of sec. 23, 4 miles west of Echards, at T road north; copper nail in section-corner post, painted "U. S. B. M. 1305.4"..... | 1, 304. 00 |

HERMAN QUADRANGLE.

[Latitude, 45° 45' -46°; longitude, 96° -96° 15'.]

From Wendall south along highway to northwest corner of sec. 4, T. 128 N., R. 43 W.,
thence east to sec. 5, T. 128 N., R. 43 W.

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| T. 129 N., R. 42 W., in northwest corner of sec. 28, 20 feet south by 30 feet east of center of crossroads; iron post stamped "1106"..... | 1, 104. 765 |
| T. 128 N., R. 43 W., in northwest corner of sec. 2, in southeast corner of bridge abutment, bridge spanning Mustinka River; aluminum tablet stamped "1091"..... | 1, 089. 799 |
| T. 129 N., R. 43 W., at northeast corner of sec. 1, on quarter line of sec. 31; monument..... | 1, 160. 36 |

From northwest corner of sec. 4, T. 128 N., R. 43 W., south along highway to southeast
corner of sec. 16, T. 127 N., R. 43 W., thence east to sec. 30, T. 127 N., R. 43 W.

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|---|-------------|
| T. 128 N., R. 43 W., 0.2 mile south of northwest corner of sec. 9, 25 feet east of center line of travel; iron post stamped "1100"..... | 1, 098. 914 |
| T. 128 N., R. 43 W., southwest corner of sec. 8, on west side of road, 20 feet west of center line of travel; spike in base of tree..... | 1, 098. 05 |
| T. 128 N., R. 43 W., in northwest corner of SW. $\frac{1}{4}$ sec. 21, 20 feet east of center of line of travel; iron post stamped "1089"..... | 1, 088. 025 |
| T. 128 N., R. 43 W., in southwest corner of sec. 22, at T road west, on granite boulder; chiseled square..... | 1, 106. 55 |
| T. 127 N., R. 43 W., in northeast corner of sec. 4, 30 feet west by 15 feet south of center of crossroads; iron post stamped "1100"..... | 1, 098. 491 |
| T. 127 N., R. 43 W., in southeast corner of sec. 23, 35 feet west by 25 feet north of center of crossroads; iron post stamped "1128"..... | 1, 126. 836 |

From southeast corner of sec. 18, T. 127 N., R. 43 W., west along highway 4.5 miles, thence south to county line.

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| T. 127 N., R. 43 W., in sec. 21, 30 feet north and 35 feet south of respective lines of travel at road fork; iron post stamped "1093"..... | Feet. 1, 091. 853 |
| T. 127 N., R. 43 W., at corner of secs. 18 and 19 and secs 13 and 24, T. 127 N., R. 44 W., in center of line of travel at crossroads; iron stake..... | 1, 074. C5 |
| Herman, in north end of west doorsill (sandstone) of the Grant County State Bank; aluminum tablet stamped "1076"..... | 1, 074. 156 |
| Herman, in front of station; top of east rail | 1, 073. 5 |

From county line at northwest corner of sec. 4, T. 126 N., R. 44 W., indirectly north along highway to southwest corner of sec. 10, T. 129 N., R. 44 W.

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|---|-------------|
| T. 126 N., R. 44 W., in northwest corner of sec. 4, 30 feet east by 25 feet south of center of crossroads; iron post stamped "1057"..... | 1, 055. 877 |
| T. 127 N., R. 44 W., in southeast corner of sec. 29, on granite boulder at crossroads; chiseled square..... | 1, 053. 56 |
| T. 127 N., R. 44 W., in northwest corner of sec. 20, 30 feet south of center of intersection at T road north; iron post stamped "1046"..... | 1, 043. 740 |
| T. 127 N., R. 44 W., in northeast corner of sec. 7, 100 feet south by 50 feet west of center of crossroads, on granite boulder; chiseled square..... | 1, 034. 34 |
| T. 127 N., R. 44 W., in northwest corner of sec. 5, 30 feet south by 30 feet east of center of crossroads; iron post stamped "1032"..... | 1, 030. 400 |
| T. 128 N., R. 44 W., in southwest corner of sec. 16, 840 feet east of Great Northern Ry., about 1.5 miles northwest of Norcross, 25 feet east by 35 feet north of center of crossroads; iron post stamped "1029"..... | 1, 027. 174 |
| T. 129 N., R. 44 W., in southeast corner of sec. 33, 50 feet north by 25 feet west of center of T road north; iron post stamped "1024"..... | 1, 021. 988 |
| T. 129 N., R. 44 W., in northwest corner of sec. 22, 40 feet south by 30 feet east of center of crossroads; iron post stamped "1025"..... | 1, 023. 417 |

From Herman north along highway 6 miles, thence west to point 1.5 miles northwest of Norcross.

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| T. 127 N., R. 44 W., in northeast corner of sec. 2, in base of cottonwood tree, on west side of Y road; spike..... | 1, 072. 17 |
| T. 127 N., R. 44 W., in northwest corner of sec. 1, 20 feet east by 20 feet south of center of crossroads; iron post stamped "1056"..... | 1, 054. 645 |
| T. 128 N., R. 44 W., in southeast corner of sec. 14, 35 feet north by 35 feet west of center of crossroads; iron post stamped "1052"..... | 1, 050. 158 |
| T. 128 N., R. 44 W., in southwest corner of sec. 16, 35 feet north by 25 feet east of center of crossroads; iron post stamped "1029"..... | 1, 027. 174 |

MORRIS QUADRANGLE.

[Latitude, 45° 30'-45° 45'; longitude, 95° 45'-96°.]

From sec. 1, T. 125 N., R. 42 W., south along highway and Great Northern Ry. to southwest corner of sec. 25, T. 124 N., R. 42 W., thence east along highway 6 miles, and north to county line.

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| T. 126 N., R. 41 W., in northwest corner of sec. 19, 23 feet east of center line of travel at road intersection, 3 feet south of east-west fence line; iron post stamped "1153"..... | 1, 151. 963 |
| T. 126 N., R. 42 W., in southeast corner of sec. 25, 36 feet north by 9 feet west of center of road intersection, in base of 12-inch poplar tree; spike.. | 1, 120. 18 |
| T. 125 N., R. 41 W., in northwest corner of sec. 6, 18 feet south by 17 feet east of center of crossroads; iron post stamped "1129"..... | 1, 127. 936 |

| | Feet. |
|---|-------------|
| T. 125 N., R. 42 W., northeast of center of sec. 24, 91 feet south of east-west fence line, 15 feet east of center of line of travel, 40 feet southeast of sign-post 8 inches in diameter; iron post stamped "1138"..... | 1, 136. 081 |
| T. 125 N., R. 42 W., southwest corner of sec. 24, at base of fence post, at jog in road to west, on $\frac{1}{2}$ -inch bump on bowlder (5 feet around)..... | 1, 137. 19 |
| T. 125 N., R. 42 W., in southeast corner of NE. $\frac{1}{4}$ sec. 35, in base of telegraph pole at road intersection and railroad crossing, 15 feet south of fence line, 50 feet northwest of railroad crossing; three nails..... | 1, 128. 86 |
| Morris, southwest corner of Citizens Bank, east of entrance, in water table; aluminum tablet stamped "1138"..... | 1, 136. 546 |
| T. 124 N., R. 42 W., in southwest corner of sec. 13, 12 feet east by 11 feet north of center of road intersection; iron post stamped "1078"..... | 1, 076. 768 |
| T. 124 N., R. 42 W., in southwest corner of sec. 25, 32 feet east by 46 feet north of center of crossroads; iron post stamped "1125"..... | 1, 123. 061 |
| T. 124 N., R. 41 W., in southeast corner of SW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 29, 20 feet north by 30 feet west of center of crossroads; iron post stamped "1163"..... | 1, 161. 801 |
| T. 124 N., R. 41 W., in northeast corner of NW. $\frac{1}{4}$ sec. 35, 18 feet west by 30 feet south of center of road intersection, 0.5 mile east by 1 mile north of Hancock; iron post stamped "1161"..... | 1, 159. 242 |
| T. 124 N., R. 41 W., in southeast corner of sec. 10, 35 feet west by 25 feet north of center of intersection, 10 feet west of north-south fence line; iron post stamped "1175"..... | 1, 173. 686 |
| T. 125 N., R. 41 W., in southeast corner of sec. 34, 20 feet north of red granary, 120 feet east by 53 feet north of fence line, on 24-inch rock; $\frac{1}{2}$ -inch knob..... | 1, 147. 64 |
| T. 125 N., R. 41 W., in northwest corner of sec. 35, 358 feet south of section line, 16 feet east of center of road, 9 feet southwest of telephone pole; iron post stamped "1150"..... | 1, 148. 548 |
| T. 125 N., R. 41 W., in southeast corner of NE. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 14, 15 feet west by 100 feet north of center of road intersection, 70 feet north of sign; iron post stamped "1158"..... | 1, 156. 662 |
| T. 125 N., R. 41 W., in southwest corner of sec. 1, 16 feet north by 51 feet east of center of road at intersection; iron post stamped "1173"..... | 1, 171. 075 |
| T. 126 N., R. 41 W., in southeast corner of sec. 26, 90 feet north by 32 feet west of center of road, on north part of 18-inch by 28-inch rock; 1-inch knob..... | 1, 182. 38 |
| T. 126 N., R. 41 W., in southeast corner of sec. 23, 10 feet west by 70 feet north of center of road, on 15-foot by 28-inch rock; 1-inch knob..... | 1, 175. 39 |
| T. 126 N., R. 41 W., in northeast corner of sec. 23, 33 feet west by 45 feet south of center of crossroads; iron post stamped "1170"..... | 1, 168. 375 |
| T. 127 N., R. 41 W., in southeast corner of sec. 35, 25 feet west by 25 feet north of corner of crossroads; iron post stamped "1232"..... | 1, 230. 741 |
| From southwest corner of sec. 13, T. 124 N., R. 42 W., west, south, and west along highway to southwest corner of sec. 19, T. 124 N., R. 42 W., thence northeast, north, and west to southwest corner of sec. 31, T. 125 N., R. 42 W. | |
| T. 124 N., R. 42 W., in northwest corner of sec. 27, 25 feet south by 25 feet east of center of crossroads, in top of concrete post; aluminum tablet stamped "1122"..... | 1, 120. 444 |
| T. 124 N., R. 42 W., in southwest corner of sec. 19, 25 feet east by 35 feet north of center of crossroads, in top of concrete post; aluminum tablet stamped "1158"..... | 1, 156. 070 |
| T. 124 N., R. 42 W., in southeast corner of sec. 7, on north side of east abutment of bridge; 1-inch knob..... | 1, 079. 73 |

T. 124 N., R. 41 W., in southeast corner of sec. 6, 40 feet north by 22 feet west of center of road intersection, in top of concrete post; aluminum nail stamped "1215"..... 1,

From southeast corner of sec. 12, T. 124 N., R. 41 W., east along highway 1 mile, thence north to county line.

T. 124 N., R. 41 W., in northwest corner of SW. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 8, 33 feet east of section line on base of 3-inch tree; two spikes..... 1,

PELICAN RAPIDS QUADRANGLE.

[Latitude, 46° 30' 40" N. Longitude, 96° 34' 15" W.]

From point near Roberts north through Pelican Rapids to sec. 12, T. 126 N., R. 43 W.

Roberts: main mark of Great Northern Ry., at crossing of main traveled road; top of cast-iron nail near point marked "1288.393"..... 1,

T. 126 N., R. 43 W., 0.25 mile west of northeast corner of sec. 21, at public road crossing; copper nail in telegraph pole, painted "U. S. B. M. 1281.4"..... 1,

T. 126 N., R. 43 W., about 0.25 mile west of northeast corner of sec. 16, 0.5 mile south of crossing; copper nail in telegraph pole, marked "1279.6"..... 1,

T. 126 N., R. 43 W., near center of sec. 9, at public road crossing, in southwest corner near fence; iron post stamped "1296"..... 1,

T. 126 N., R. 43 W., about center of NE. $\frac{1}{4}$ sec. 4, at public-road crossing, in southwest corner; copper nail in telephone pole, marked "1290.9"..... 1,

T. 126 N., R. 43 W., 0.25 mile south of northeast corner of sec. 33, 500 feet west of public highway; copper nail in telegraph pole, marked "1294"..... 1,

Pelican Rapids, southeast corner of Great Northern Ry. land reserve, corner of Broadway and Depot Street; iron post stamped "1309"..... 1,

T. 126 N., R. 43 W., north quarter corner of sec. 22, 150 feet east of crossroads, on north side of road; copper nail in telephone pole, marked "1317.6"..... 1,

T. 126 N., R. 43 W., about 0.25 mile north of south quarter corner of sec. 14, at T road west; copper nail in telephone pole, marked "1336.5"..... 1,

T. 126 N., R. 43 W., near north quarter corner of sec. 14, 150 feet southwest of A. Jacob's house; copper nail in telephone pole, marked "1341.0"..... 1,

T. 126 N., R. 43 W., northeast corner of sec. 14, at northeast corner of crossroads; iron post stamped "1352"..... 1,

T. 126 N., R. 43 W., northeast corner of sec. 13, at crossroads; copper nail in telephone pole, marked "1390.4"..... 1,

T. 126 N., R. 43 W., northwest corner of sec. 12, at crossroads; copper nail in telephone pole, marked "1352.1"..... 1,

T. 126 N., R. 43 W., northwest corner of sec. 1, 150 feet northwest of W. Bronk's house; copper nail in telephone pole, marked "1356.8"..... 1,

T. 127 N., R. 43 W., northeast corner of sec. 36, at southwest corner of crossroads; iron post stamped "1339"..... 1,

T. 127 N., R. 42 W., southwest corner of sec. 14; copper nail in telephone pole, marked "1349.0"..... 1,

T. 127 N., R. 42 W., about 0.25 mile northeast of southwest corner of sec. 20, northeast corner of red bridge over Pelican River; chiseled square marked "1321.5"..... 1,

T. 127 N., R. 42 W., 0.25 mile east of west quarter corner of sec. 20, at southwest corner of T road south; iron post stamped "1366"..... 1,

T. 127 N., R. 42 W., northwest corner of sec. 20, at T road west; copper nail in telephone pole, marked "1331.3"..... 1,

| | |
|---|-------------------|
| T. 137 N., R. 42 W., southeast corner of sec. 7, at angle in road southwest, on north side of road; copper nail in elm tree, marked "1352.0" | Feet. 1,350.70 |
| T. 137 N., R. 42 W., southwest corner of sec. 7, at T road south, on east side of road; iron post stamped "1342" | 1,340.428 |
| T. 137 N., R. 43 W., southwest corner of sec. 12, at northeast corner at T road east; copper nail in telephone pole, marked "1330.7" | 1,329.41 |
| T. 137 N., R. 43 W., near north quarter corner of sec. 11, at west end of Pelican Lake, at T road west; copper nail in telephone pole, marked "1326.2" | 1,324.87 |
| Pelican Lake; surface of water September 26, 1911 | 1,316.6 |
| T. 137 N., R. 43 W., 0.25 mile east of west quarter corner of sec. 1, 1.5 miles south of Cormorant, 40 feet west by 10 feet north of T road north, at Chas. Boser's mail box; iron post stamped "1327" | 1,326.097 |
| T. 138 N., R. 43 W., 0.25 mile east of west quarter corner of sec. 36, 0.4 mile southeast of Cormorant, at T road east, on east side of road; copper nail without washer in telephone pole, marked "1348.9" | 1,347.57 |
| Cormorant, 0.2 mile northeast of, 0.25 mile east of northwest corner of sec. 36, T. 138 N., R. 43 W., on south side of road; copper nail in telephone pole, marked "1369.0" | 1,367.70 |
| T. 138 N., R. 43 W., northeast corner of sec. 36, south side of road; iron post stamped "1374" | 1,372.583 |
| T. 138 N., R. 42 W., northwest corner of sec. 32, at crossroads; copper nail in telephone pole, marked "1372.1" | 1,370.84 |

From T. 137 N., R. 43 W., sec. 1, west and south to T. 137 N., R. 44 W., sec. 30.

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| T. 138 N., R. 43 W., west quarter corner of sec. 36, 0.4 mile southeast of Cormorant, 20 feet east by 60 feet north of T road east; copper nail in telephone pole, painted "U. S. B. M. 1349.1" | 1,347.65 |
| Cormorant, in southeast corner of Cherry's store; spike | 1,369.83 |
| T. 138 N., R. 43 W., west quarter corner of sec. 25, 0.7 mile northwest of Cormorant, 95 feet west by 30 feet south of T road south; copper nail in telephone pole, painted "U. S. B. M. 1377.6" | 1,376.15 |
| T. 138 N., R. 43 W., east quarter corner of sec. 27, 1.8 miles northwest of Cormorant, 30 feet west by 20 feet north of crossroads; iron post stamped "1373" | 1,371.379 |
| T. 138 N., R. 43 W., west quarter corner of sec. 27, 2.9 miles northwest of Cormorant, 0.2 mile west of white church, at T road east; copper nail in telephone pole, painted "U. S. B. M. 1382.0" | 1,380.55 |
| T. 138 N., R. 43 W., west quarter corner of sec. 28, northwest corner of school house; copper nail in cornice, painted "U. S. B. M. 1405.7" | 1,404.23 |
| T. 138 N., R. 43 W., northeast corner of sec. 29, 40 feet north of L road southwest; iron post stamped "Prim. Trav. Sta. No. 6, 1403, 1911" | 1,401.340 |
| T. 138 N., R. 43 W., southwest corner of sec. 20, at crossroads; copper nail in corner fence post, painted "U. S. B. M. 1413.9" | 1,412.44 |
| T. 138 N., R. 44 W., southeast corner of sec. 24, at crossroads; copper nail in Adolph Poalson's mail box, painted "U. S. B. M. 1442" | 1,440.91 |
| T. 138 N., R. 43 W., quarter mile north of southwest corner of sec. 30, 1,000 feet northeast of Svoen Carlson's house, 25 feet north of lane, 10 feet east of road; iron post stamped "1464" | 1,462.623 |
| T. 138 N., R. 44 W., 0.2 mile south of north quarter corner of sec. 25, 30 feet east of C. Arneson's mail box, at T road west; chiseled ring on highest point of granite boulder, painted "U. S. B. M. 1429.7" | 1,428.30 |
| T. 138 N., R. 44 W., 0.2 mile south of northwest corner of sec. 26, at T road east; copper nail in corner fence post, painted "U. S. B. M. 1375.0" | 1,373.52 |

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| T. 138 N., R. 44 W., 0.2 mile south of northeast corner of sec. 28, 100 feet south of T road east, 300 feet north of Rollag; copper nail in corner telephone pole, painted "U. S. B. M. 1363.1"..... | Feet. 1, 361. 62 |
| T. 138 N., R. 44 W., northeast corner of sec. 33, 0.8 mile south of Rollag, 20 feet west by 60 feet south of crossroads; iron post stamped "1299".... | 1, 297. 720 |
| T. 138 N., R. 44 W., southeast corner of sec. 29, 1.8 miles southwest of Rollag, at crossroads; copper nail in telephone pole, painted "U. S. B. M. 1196.3"..... | 1, 194. 88 |
| T. 138 N., R. 44 W., southeast corner of sec. 32, 2.8 miles southwest of Rollag, at crossroads; copper nail in telephone pole, painted "U. S. B. M. 1331.3"..... | 1, 329. 84 |
| T. 137 N., R. 44 W., southwest corner of sec. 4, 40 feet east by 15 feet north of crossroads, 10 feet east of Albert Anderson's mail box; iron post stamped "1397"..... | 1, 395. 587 |
| T. 137 N., R. 44 W., 600 feet northeast of southwest corner of sec. 9, 35 feet northwest of H. O. Nelson's mail box, 60 feet northeast of pond; copper nail in telephone pole, painted "U. S. B. M. 1341.7"..... | 1, 340. 25 |
| T. 137 N., R. 44 W., southwest corner of sec. 16, 40 feet north by 25 feet east of crossroads; iron post stamped "1303"..... | 1, 300. 209 |
| T. 137 N., R. 44 W., southeast corner of sec. 20, at T road north; copper nail in telephone pole, painted "U. S. B. M. 1252.2"..... | 1, 249. 69 |
| T. 137 N., R. 44 W., 0.2 mile north of south quarter corner of sec. 29, 20 feet north by 40 feet west of T road west; copper nail in corner fence post, painted "U. S. B. M. 1215.1"..... | 1, 212. 55 |
| From T. 135 N., R. 44 W., sec. 13, north to T. 138 N., R. 44 W. | |
| T. 135 N., R. 44 W., southwest corner of sec. 13, 3 miles southeast of Stod, at T road north; copper nail in telephone pole, painted "U. S. B. M. 1329.6"..... | 1, 328. 14 |
| T. 135 N., R. 44 W., northeast corner of sec. 14, 2 miles east of Stod, 30 feet south by 50 feet west of crossroads; iron post stamped "1339"..... | 1, 337. 200 |
| T. 135 N., R. 44 W., southwest corner of sec. 1, 3 miles northeast of Stod, at crossroads; copper nail in telephone pole, painted "U. S. B. M. 1377.5"..... | 1, 376. 13 |
| T. 135 N., R. 44 W., near northeast corner of sec. 2, 4 miles northeast of Stod, 90 feet south by 70 feet east of T road west, 50 feet south of north edge of grove; copper nail in willow tree, painted "U. S. B. M. 1361.2"..... | 1, 359. 73 |
| T. 136 N., R. 44 W., 0.2 mile west of northeast corner of sec. 35, 20 feet south by 20 feet west of crossroads; iron post stamped "1350 Minn"..... | 1, 348. 170 |
| T. 136 N., R. 44 W., 0.2 mile west of northeast corner of sec. 26, 5 miles west of Pelican Rapids, 30 feet north by 10 feet east of T road south, on north side of granite boulder; chiseled ring painted "U. S. B. M. 1341.6"..... | 1, 340. 13 |
| T. 136 N., R. 44 W., northeast corner of sec. 23, 6.3 miles northwest of Pelican Rapids, 140 feet west by 10 feet south of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1376.4"..... | 1, 374. 96 |
| T. 136 N., R. 44 W., 0.2 mile north of southwest corner of sec. 12, 7.7 miles northwest of Pelican Rapids, 20 feet south by 20 feet west of crossroads; iron post stamped "1320"..... | 1, 318. 965 |
| T. 136 N., R. 44 W., southwest corner of sec. 1, 100 feet south by 15 feet west of T road east, 300 feet north of slough; copper nail in telephone pole, painted "U. S. B. M. 1318.8"..... | 1, 317. 34 |
| T. 136 N., R. 43 W., southwest corner of sec. 6, at lane leading to Anstern Melby's house; copper nail in mail-box post, painted "U. S. B. M. 1384.3"..... | 1, 382. 83 |
| T. 136 N., R. 43 W., southeast corner of sec. 6, 90 feet north by 10 feet west of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1374.5"..... | 1, 373. 04 |

| | Feet. |
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| T. 136 N., R. 43 W., northwest corner of sec. 5, 25 feet south by 40 feet east of T road south; iron post stamped "Prim. Trav. Sta. No. 3, 1376 Minn. 1911"..... | 1, 374. 360 |
| T. 137 N., R. 43 W., northeast corner of sec. 32, 30 feet west by 100 feet south of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1424.1"..... | 1, 422. 64 |
| T. 137 N., R. 43 W., northeast corner of sec. 29, 30 feet west by 25 feet south of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1409.0"..... | 1, 407. 54 |
| T. 137 N., R. 43 W., southeast corner of sec. 17, 60 feet north by 20 feet west of T road east; iron post stamped "1398"..... | 1, 396. 678 |
| T. 137 N., R. 43 W., center of sec. 17, at road leading to A. Seim's house; copper nail in fence prop, painted "U. S. B. M. 1408.8"..... | 1, 407. 34 |
| T. 137 N., R. 43 W., 0.2 mile north of south quarter corner of sec. 18, at turn in road; 35 feet south of road; copper nail in telephone pole, painted "U. S. B. M. 1398.3"..... | 1, 396. 90 |
| T. 137 N., R. 44 W., northeast corner of sec. 13, 35 feet west of John Thompson's mail box; iron post stamped "1428"..... | 1, 426. 703 |
| T. 137 N., R. 43 W., southwest corner of sec. 6, at crossroads; copper nail in corner fence post, painted "U. S. B. M. 1456.6"..... | 1, 455. 10 |
| T. 138 N., R. 43 W., southwest corner of sec. 31, 60 feet east by 30 feet north of crossroads; copper nail in telephone pole, painted "U. S. B. M. 1418.9"..... | 1, 417. 47 |

PERHAM QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 95° 30'–95° 45']

From Richville north via Becker County line to point near Frasee, thence southeast to Perham, thence southwest to Richville.

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| Richville, 0.7 mile northwest of, 25 feet south of tracks at crossing; copper nail in signpost, marked "1368.4"..... | 1, 366. 91 |
| Lake Marion; surface of water July 6, 1911..... | 1, 337. 6 |
| Richville, 1.5 miles north of, near northwest corner of sec. 8, T. 135 N., R. 39 W., east side of road and Lake Marion; copper nail in telephone pole, marked "1343.5"..... | 1, 341. 96 |
| T. 135 N., R. 39 W., near northeast corner of sec. 5, 0.25 mile south of crossroads; copper nail in telephone pole, marked "1383.4"..... | 1, 381. 91 |
| T. 136 N., R. 39 W., east quarter corner of sec. 32, on east side of T road west; iron post stamped "1388"..... | 1, 386. 375 |
| T. 136 N., R. 39 W., west quarter corner of sec. 32; copper nail in corner fence post, marked "1383.8"..... | 1, 382. 27 |
| T. 136 N., R. 39 W., west quarter corner of sec. 29, at T road west; copper nail in corner fence post, marked "1393.2"..... | 1, 391. 64 |
| T. 136 N., R. 39 W., west quarter corner of sec. 29; iron post stamped "1383"..... | 1, 381. 114 |
| T. 136 N., R. 39 W., east quarter corner of sec. 18, at crossroads; copper nail in telephone pole, marked "1372.6"..... | 1, 371. 05 |
| T. 136 N., R. 39 W., east quarter corner of sec. 7, north of brick schoolhouse; copper nail in pole, marked "1380.4"..... | 1, 378. 86 |
| T. 136 N., R. 39 W., southeast corner of sec. 6; iron post stamped "1370".... | 1, 368. 672 |
| T. 136 N., R. 39 W., northwest corner of sec. 5, at T road south; copper nail in pole, marked "1368.1"..... | 1, 366. 55 |
| T. 136 N., R. 39 W., northwest corner of sec. 4, on north side of road; copper nail in telephone pole, marked "1369.3"..... | 1, 367. 80 |

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| T. 137 N., R. 39 W., west quarter corner between secs. 34, and at lane to east; copper nail in telephone pole, marked "1362.5" | Feet. 1,361.00 |
| T. 137 N., R. 39 W., near north quarter corner of sec. 34, 200 feet east of bridge over Red River, on east side of road; iron post stamped "1348".... | 1,346.202 |
| Perham, 6.1 miles north of, at west quarter corner of sec. 27, T. 137 N., R. 39 W., 150 feet southwest of white schoolhouse (district 51), at T road east; copper nail in telephone pole, marked "1383.4" | 1,381.87 |
| T. 137 N., R. 39 W., west quarter corner of sec. 22, on west side of road; copper nail in telephone pole, marked "1370.5" | 1,368.91 |
| T. 137 N., R. 39 W., west quarter corner of sec. 15, on west side of road near John Rick's house; copper nail in telephone pole, marked "1374.8" | 1,373.26 |
| T. 137 N., R. 39 W., northwest corner of sec. 15, 0.5 mile south of white church, on east side of road; iron post stamped "1371" | 1,369.752 |
| T. 137 N., R. 39 W., center of sec. 9, 175 feet northwest of schoolhouse (district 147), on west side of road; copper nail in telephone pole, marked "1391.8" | 1,390.24 |
| T. 137 N., R. 39 W., 0.25 mile north of southwest corner of sec. 4, at T road west; copper nail in telephone pole, marked "1387.9" | 1,386.29 |
| T. 138 N., R. 39 W., 0.25 mile northeast of southwest corner of sec. 33, in center of old road; chiseled square on granite rock, painted "1397.9"... | 1,396.32 |
| T. 138 N., R. 39 W., 0.25 mile east of northwest corner of sec. 34, at road leading to P. Schmidt's house, on south side of road; iron post stamped "1454" | 1,452.731 |
| T. 138 N., R. 39 W., 0.25 mile east of northwest corner of sec. 35, east of gate leading to St. Germain's house; copper nail in root of pine tree, marked "1444.2" | 1,442.65 |
| T. 138 N., R. 39 W., northeast corner of sec. 35, on west side of road, 200 feet south of T road west; copper nail in poplar tree, marked "1402.5"... | 1,400.95 |
| T. 137 N., R. 39 W., near northwest corner of sec. 1, 0.4 mile north of T road east, on east side of road; copper nail in root of poplar tree, marked "1401.4" | 1,399.82 |
| T. 137 N., R. 39 W., near center of sec. 1, 20 feet west of State ditch, at south end of Dead Lake, on south side of road; iron post stamped "1381".... | 1,379.906 |
| T. 137 N., R. 38 W., northwest corner of sec. 6, in northwest corner of bridge over Toad River; copper nail marked "1381.3" | 1,379.78 |
| T. 137 N., R. 38 W., northeast corner of sec. 6, at crossroads; copper nail in telephone pole, marked "1450.5" | 1,449.01 |
| T. 137 N., R. 38 W., southeast corner of sec. 6, 300 feet northwest of schoolhouse (district 242), on west side of road, at corner of fence; copper nail in stake, marked "1443.6" | 1,442.10 |
| T. 137 N., R. 38 W., near west quarter corner of sec. 8, in front of John Schmidt's house; iron post stamped "1427" | 1,425.725 |
| T. 137 N., R. 38 W., near west quarter corner of sec. 17, 30 feet north of turn in road, on east side of road; copper nail in root of poplar tree, marked "1408.4" | 1,406.96 |
| T. 137 N., R. 38 W., 0.25 mile north of center of sec. 20, 0.25 mile south of Red Eye road forks, near second-class road forks; copper nail in pine tree, marked "1398.8" | 1,397.37 |
| T. 137 N., R. 38 W., center of sec. 19, at T road south; iron post stamped "1385" | 1,383.546 |
| T. 137 N., R. 38 W., 80 rods north of south quarter corner of sec. 30, 70 feet west of road, on hill overlooking Pine Lakes; copper nail in oak tree, marked "1381.8" | 1,380.35 |

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| T. 137 N., R. 38 W., near southwest quarter corner of sec. 31, east side of road, at forks of road; copper nail in telephone pole, marked "1374.9" .. | Feet. 1, 373.46 |
| T. 138 N., R. 39 W., in sec. 1, 30 feet south of George Robertson's saloon, at outlet of Little Pine Lake; iron post stamped "1338" | 1, 336.651 |
| T. 136 N., R. 39 W., northeast corner of sec. 11; copper nail in pole, marked "1363.0" | 1, 361.62 |
| T. 136 N., R. 39 W., north quarter corner of sec. 11, at crossroads; copper nail in pole, marked "1371.2" | 1, 369.77 |
| T. 136 N., R. 39 W., south quarter corner of sec. 11, at crossroads; copper nail in telephone pole, marked "1370.3" | 1, 368.94 |
| Perham, corner of Northern Pacific Ry. right of way and main east-west street, at rear of Louis Stuart's property; iron post stamped "1371" | 1, 369.283 |
| T. 136 N., R. 39 W., near southwest corner of sec. 13, at north side of crossing, east side of Northern Pacific Ry. tracks; copper nail in telegraph pole, marked "1363.4" | 1, 362.01 |
| T. 136 N., R. 39 W., in sec. 24, on north side of Ottertail River, at Schroeder's brewery, on west side of track at crossing; copper nail in telegraph pole, marked "1344.5" | 1, 343.15 |
| T. 136 N., R. 38 W., northwest corner of sec. 30, on west side of forks of road; iron post stamped "1341" | 1, 339.731 |
| T. 136 N., R. 38 W., near east quarter corner of sec. 30, on south side of Northern Pacific Ry. at crossing of public highway; copper nail in telegraph pole, marked "1364.4" | 1, 363.04 |
| T. 136 N., R. 38 W., northwest corner of sec. 32, 150 feet south of school-house (district 130); copper nail in corner fence post, marked "1353.75" .. | 1, 352.41 |
| T. 136 N., R. 38 W., southeast corner of sec. 31, on west side of road, near fence corner; iron post stamped "1347" | 1, 345.293 |
| T. 135 N., R. 38 W., southeast corner of sec. 6, west of crossroads; copper nail in scrub-oak tree, marked "1352.8" | 1, 351.44 |
| T. 136 N., R. 38 W., southwest corner of sec. 6, 125 feet southeast of school-house (district 13), on north side of east-west road, at crossroads; iron post stamped "1341" | 1, 339.970 |
| T. 135 N., R. 39 W., northeast corner of sec. 10, 100 feet southwest of crossroads; copper nail in corner fence post, marked "1338.3" | 1, 336.99 |
| T. 135 N., R. 39 W., southeast corner of sec. 3; iron post stamped "1370" .. | 1, 368.352 |
| T. 135 N., R. 39 W., northwest corner of sec. 14, in base of scrub-oak tree; copper nail, marked "1350.7" | 1, 349.47 |
| T. 135 N., R. 39 W., center of sec. 15, on south side of road; copper nail in oak tree, marked "1356.0" | 1, 354.70 |
| Richville, 75 feet north of station; iron post stamped "1354" | 1, 352.923 |

From Richville northwest to Dent, thence north to Frasee, thence east along highway about 6 miles.

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| Richville, 1.5 miles northwest of, near west quarter corner of sec. 7, T. 135 N., R. 39 W.; copper nail in crossing sign, marked "1364.2" | 1, 362.70 |
| T. 135 N., R. 40 W., in sec. 12, 700 feet northwest of private crossing and house; copper nail in telegraph pole, marked "1360.9" | 1, 359.40 |
| T. 135 N., R. 40 W., near south quarter corner of sec. 2, at southeast corner of crossing of public highway; iron post stamped "1345" | 1, 343.79 |
| T. 135 N., R. 40 W., northwest corner of sec. 2, at crossing of public highway; copper nail in telegraph pole, marked "1362.3" | 1, 360.78 |
| Dent, 1,000 feet north of station, at railroad crossing, on east side of track; iron post stamped "1364" | 1, 362.668 |

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| Dent, 1 mile northwest of, in sec. 28, T. 136 N., R. 40 W., at abandoned crossing; copper nail in telegraph pole, marked "1373.7" | 1,372.20 |
| T. 136 N., R. 40 W., near south quarter corner of sec. 9, at crossing of public highway, at east edge of right of way and edge of Jacob Rusch's land; iron post stamped "1364" | 1,362.915 |
| T. 136 N., R. 40 W., sec. 8, 600 feet north of private crossing, 0.25 mile north of wood spur; copper nail in pole, marked "1375.9" | 1,374.44 |
| T. 136 N., R. 40 W., in northwest part of sec. 5, 0.25 mile south of public road crossing, at private crossing; copper nail in crossing signal, marked "1380.3" | 1,378.80 |
| T. 137 N., R. 40 W., near center of sec. 32, 40 feet east of overhead railroad bridge, near Lake Sybil; iron post stamped "1366" | 1,364.917 |
| T. 137 N., R. 40 W., east quarter corner of sec. 33, at T road west; copper nail in telephone pole, marked "1368.3" | 1,366.76 |
| T. 137 N., R. 40 W., north quarter corner of sec. 34, 300 feet west of H. Plouman's mail box; copper nail in telephone pole, marked "1412.4" .. | 1,410.90 |
| T. 137 N., R. 40 W., northwest corner of sec. 35, at T road north; copper nail in telephone pole, marked "1362.3" | 1,360.81 |
| T. 137 N., R. 40 W., southwest corner of sec. 23, at T road south; copper nail in telephone pole, marked "1363.9" | 1,362.37 |
| T. 137 N., R. 40 W., 0.25 mile south of center of sec. 23, on west side of forks of road to Luce, near telephone pole; iron post stamped "1394" .. | 1,392.501 |
| T. 137 N., R. 40 W., southeast corner of sec. 14, at T road west; copper nail in telephone pole, marked "1361.2" | 1,359.75 |
| T. 137 N., R. 40 W., 0.25 mile east by 0.25 mile south of northwest corner of sec. 13, at T road north; copper nail in telephone pole, marked "1367.2" .. | 1,365.69 |
| T. 137 N., R. 40 W., near east quarter corner of sec. 11, at crossroads; iron post stamped "1378" | 1,376.665 |
| T. 137 N., R. 40 W., near southwest corner of sec. 1, at junction of north-south road and Northern Pacific Ry. right of way; copper nail in telephone pole, marked "1386.9" | 1,385.46 |
| T. 138 N., R. 40 W., in south part of sec. 35, at private crossing, on east side of track; copper nail in telegraph pole, marked "1393.2" | 1,391.75 |
| Frazee, 100 feet south by 100 feet west of station, in northeast corner of small park; iron post stamped "1399" | 1,397.581 |
| T. 138 N., R. 40 W., northwest corner of sec. 36, 150 feet north of F. Fogel's house, at forks of road; copper nail in telephone pole, marked "1410.6" .. | 1,409.18 |
| T. 138 N., R. 39 W., 0.25 mile east by 0.25 mile north of southwest corner of sec. 30, at T road north; copper nail in telephone pole, marked "1389.6" | 1,388.15 |
| T. 138 N., R. 39 W., 0.25 mile north by 0.25 mile east of southwest corner of sec. 29, at turn of road west; iron post stamped "1401" | 1,400.054 |
| T. 138 N., R. 39 W., southeast corner of sec. 29, on north side of road at T road south; copper nail in root of stump, marked "1392.1" | 1,390.75 |

From point 2 miles west of Frazee to Frazee.

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| Frazee, 1.9 miles northwest of, near east quarter corner of sec. 28, T. 138 N., R. 40 W., at public crossing, on east side of track; copper nail in telegraph pole, marked "1398.2" | 1,397.10 |
| T. 138 N., R. 40 W., in sec. 27, 6 telegraph poles east of "1 mile to Frazee" sign, on north side of track; copper nail in pole, marked "1402.3" | 1,401.19 |
| Frazee, 100 feet south by 100 feet southwest of station, at northeast corner of small park; iron post stamped "1399" | 1,397.581 |

ROTHSAY QUADRANGLE.

[Latitude, 46° 15'–46° 30'; longitude, 96° 15'–96° 30'.]

From northeast corner of sec. 32, T. 135 N., R. 44 W., to Rothsay.

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| T. 135 N., R. 44 W., 0.2 mile west of northeast corner of sec. 32, 30 feet south of road; iron post stamped "1279 Minn"..... | Feet. 1,277.812 |
| Rothsay, on cement step of east door on north side of brick creamery; chiseled point..... | 1,197.03 |
| Rothsay, First State Bank building corner of Second and Main streets; chiseled hole in step on south side (C. & G. S. b. m. G ₄)..... | 1,200.195 |

From northwest corner of sec. 8, T. 134 N., R. 44 W., north to Rothsay.

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| T. 134 N., R. 44 W., 40 feet south by 25 feet west of northwest corner of sec. 8; iron post stamped "1188"..... | 1,187.144 |
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UNDERWOOD QUADRANGLE.

[Latitude, 46° 15'–46° 30'; longitude, 95° 45'–96°.]

From point 1.3 miles east of Fergus Falls along Northern Pacific Ry. to Underwood, thence north along highways to point near corner of sec. 20, T. 135 N., R. 42 W.

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| Wall Lake, 0.6 mile west of, 40 feet south of railroad, in northwest corner of railroad right-of-way, at railroad crossing; iron post stamped "1257"..... | 1,255.457 |
| Wall Lake, in front of station; top of rail..... | 1,287.0 |
| Underwood, 3.2 miles west of, 50 feet north of railroad, in southeast corner of T road; iron post stamped "1339"..... | 1,337.595 |
| Underwood, 40 feet west of station, 20 feet south of railroad track, in small grass park; iron post stamped "1343"..... | 1,341.220 |
| Underwood, 1 mile north of, at T road east, west side of road; paint spot on highest point of large rock..... | 1,359.58 |
| T. 133 N., R. 41 W., near center of sec. 20, 75 feet northwest of schoolhouse (district 109), in southeast corner of C. A Weaver's farm; iron post stamped "1347"..... | 1,345.839 |
| Underwood, 3.5 miles north of, on concrete foundation of guidepost marked "Fergus Falls 12 miles, Underwood 3.5 miles, Phelps 6 miles"; chiseled square..... | 1,339.80 |
| Underwood, 5.6 miles north of, northwest corner of bridge over ditch that connects Lake Anna with Little Lake Anna; nailhead..... | 1,324.24 |
| T. 133 N., R. 41 W., near southwest corner of sec. 4, on east side of road; iron post stamped "1345"..... | 1,343.447 |
| T. 133 N., R. 41 W., near northwest corner of sec. 4, 150 feet northwest of schoolhouse; iron bolt in root of elm tree..... | 1,378.13 |
| T. 134 N., R. 41 W., in sec. 31, on east side of road, at Y road between Lost Lake and Little Lost Lake; iron post stamped "1321"..... | 1,319.586 |
| Wegland post office, 0.6 mile south of, on west side of road opposite lake; chiseled square on granite rock..... | 1,338.08 |
| Wegland, in front of post office; ground elevation..... | 1,349.4 |
| Wegland, 0.4 mile northeast of, in sec. 26, T. 134 N., R. 42 W., 60 feet north of north end of Wegland bridge over Ottertail River, in forks of road; iron post stamped "1313 Minn"..... | 1,311.200 |
| T. 134 N., R. 42 W., 22 feet northeast of southwest corner of sec. 14; chiseled square on large granite rock..... | 1,330.59 |
| T. 134 N., R. 42 W., in south part of sec. 14, 17 feet south of road at Y road; chiseled square on top of large granite rock..... | 1,396.15 |
| T. 134 N., R. 42 W., 2 feet south of northeast corner of SE. $\frac{1}{4}$ sec. 14; iron post stamped "1372"..... | 1,370.304 |

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|--|---------|
| T. 135 N., R. 41 W., 555 feet north of southwest corner of SE. $\frac{1}{4}$ sec. 31; iron post stamped "1363 Minn"..... | 1,361.2 |
| T. 135 N., R. 41 W., near southwest corner of NW. $\frac{1}{4}$ sec. 30, in northwest corner of crossroads; chiseled square on granite rock..... | 1,401.6 |
| T. 135 N., R. 42 W., 30 feet south of northeast corner of sec. 26; iron post stamped "1415"..... | 1,413.4 |
| T. 135 N., R. 42 W., 20 feet south by 30 feet west of northeast corner of sec. 27, 270 feet west of schoolhouse; chiseled square on rock..... | 1,458.1 |
| T. 135 N., R. 42 W., near southeast corner of sec. 20, 30 feet north by 30 feet east of center of crossroads; iron post stamped "1439"..... | 1,437.2 |

From Underwood east along Northern Pacific Ry. 3.57 miles.

| | |
|--|---------|
| Underwood, 2 miles east of, 25 feet south of railroad, 20 feet west of wagon road at railroad crossing; highest point on granite rock..... | 1,343.3 |
| Underwood, 3.6 miles east of, 45 feet south of railroad, on right of way, 15 feet east of T road north; iron post stamped "1342"..... | 1,340.1 |

From point near northwest corner of sec. 20, T. 134 N., R. 40 W., east along highways to southwest corner of NW. $\frac{1}{4}$ sec. 30, T. 135 N., R. 41 W.

| | |
|--|---------|
| T. 134 N., R. 41 W., 330 feet west of southeast corner of sec. 1, on east side of road; iron post stamped "1332"..... | 1,330.1 |
| T. 134 N., R. 41 W., 16.5 feet south by 650 feet east of northwest corner of sec. 3; iron post stamped "1337" (in forks of road)..... | 1,336.6 |
| T. 135 N., R. 41 W., northwest corner of T road north, at Star Lake; spike in root of elm tree..... | 1,332.7 |
| Bridge at west end of Dead Lake..... | 1,331.4 |
| T. 135 N., R. 41 W., near northeast corner of SW. $\frac{1}{4}$ sec. 28, 1.2 miles north of Star Lake; spike in root of oak tree..... | 1,352.6 |
| T. 135 N., R. 41 W., near northeast corner of sec. 29; iron post stamped "Prim. Trav. Sta. No. 20, 1375"..... | 1,374.4 |
| T. 135 N., R. 41 W., near southwest corner of NW. $\frac{1}{4}$ sec. 30, in northwest corner of crossroads; chiseled square on granite rock..... | 1,401.6 |

At a point 6 miles northeast of Erharts.

| | |
|---|---------|
| T. 135 N., R. 42 W., northeast corner of sec. 20, at northeast corner of crossroads; iron post stamped "Prim. Trav. Sta. No. 4, 1436 Minn. 1910"..... | 1,434.4 |
|---|---------|

Near Star Lake.

| | |
|---|---------|
| T. 135 N., R. 41 W., 0.25 mile east of southwest corner of sec. 23; copper nail in signboard, marked "1359.4"..... | 1,358.0 |
| T. 135 N., R. 41 W., northwest corner of sec. 27, at T road east; copper nail in telephone pole, marked "1349.0"..... | 1,347.6 |
| T. 135 N., R. 41 W., near northeast corner of SE. $\frac{1}{4}$ sec. 28; spike in root of oak tree, marked "1353.3"..... | 1,352.6 |
| T. 135 N., R. 41 W., 3.4 miles northwest of Star Lake, 0.2 mile south of northwest corner of sec. 21 (forks of road), on east side of road; copper nail in root of birch tree, marked "1360.6"..... | 1,359.1 |

From point near schoolhouse No. 80 northeast to corner of sec. 31, T. 134 N., R. 41 W.

| | |
|---|---------|
| T. 133 N., R. 42 W., northeast corner of NW. $\frac{1}{4}$ sec. 21, 15 feet west by 45 feet south of crossroads, 70 feet northeast of white church; iron post stamped "1326"..... | 1,325.0 |
| T. 133 N., R. 42 W., in sec. 9, 15 feet east of road, in southwest corner of H. C. Biekke's barn, painted and marked with copper nail, marked "1368.3"..... | 1,366.9 |

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|--|-------------------|
| T. 133 N., R. 42 W., southwest corner of sec. 4, at crossroads, in corner fence post, painted and marked with copper nail, marked "1326.9"... | Feet. 1,325.58 |
| T. 133 N., R. 42 W., sec. 4, 20 feet east by 30 feet north of forks, in road near fence line; iron post stamped "1329"..... | 1,327.290 |
| T. 133 N., R. 42 W., northeast corner of sec. 3, 850 feet east of schoolhouse No. 207, south side of road; chisel mark on rock, marked "1354.1"..... | 1,352.85 |
| T. 134 N., R. 41 W., 50 feet north of southwest corner of sec. 31; highest point on granite rock, marked "1338.5"..... | 1,337.10 |
| T. 134 N., R. 41 W., 35 feet northwest of southeast corner of sec. 31; highest point on granite boulder, marked "1370.0"..... | 1,368.60 |
| T. 134 N., R. 41 W., 0.2 mile north of southwest corner of sec. 21; iron post stamped "1349"..... | 1,347.423 |
| From southwest corner of sec. 4, T. 133 N., R. 41 W., to southeast corner of sec. 31, T. 134 N., R. 41 W. | |
| T. 133 N., R. 41 W., near southwest corner of sec. 4, on east side of road; iron post stamped "1345"..... | 1,343.447 |
| T. 133 N., R. 41 W., near northwest corner of sec. 4, 150 feet northwest of schoolhouse No. 182; spike in root of elm tree, marked "1379.6"..... | 1,378.08 |
| T. 133 N., R. 41 W., northwest corner of sec. 4, 250 feet northwest of schoolhouse No. 182; iron post stamped "Prim. Trav. Sta. No. 27, 1379"..... | 1,377.407 |
| T. 134 N., R. 41 W., 35 feet northwest of southeast corner of sec. 31; highest point on granite boulder, marked "1370.0"..... | 1,368.60 |
| From northwest corner of sec. 4, T. 133 N., R. 41 W., north to northwest corner of sec. 3, T. 134 N., R. 41 W. | |
| T. 133 N., R. 41 W., near northeast corner of sec. 3, 200 feet north of G. Randall's house, on north side of road; copper nail in telephone pole, marked "1361.0"..... | 1,359.64 |
| T. 134 N., R. 41 W., southeast corner of SW. $\frac{1}{4}$ sec. 34, near crossroads; iron post stamped "1341"..... | 1,339.874 |
| T. 134 N., R. 41 W., near northwest corner of sec. 35, on southwest corner of red bridge at Phelps's mill; copper nail marked "1324.5"..... | 1,323.08 |
| Red River; surface of water June 7, 1911..... | 1,316.0 |
| T. 134 N., R. 41 W., near center of sec. 26, on south side of road; copper nail in telephone pole, marked "1343.5"..... | 1,342.07 |
| T. 134 N., R. 41 W., northwest corner of NE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 26; copper nail in telephone pole, marked "1408.9"..... | 1,407.44 |
| T. 134 N., R. 41 W., southeast corner of SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 23; iron post stamped "1361"..... | 1,359.902 |
| T. 134 N., R. 41 W., southeast corner of SW. $\frac{1}{4}$ sec. 22, 150 feet southeast of John Sherer's house; copper nail in telephone pole, marked "1425.5"..... | 1,424.03 |
| T. 133 N., R. 41 W., near northwest corner of SW. $\frac{1}{4}$ sec. 22, on south side of road; spike at foot of basswood tree, marked "1395.3"..... | 1,393.83 |
| T. 134 N., R. 41 W., near northwest corner of sec. 21, 500 feet north of L. Larson's house, on west side of road; copper nail in corner fence post, marked "1349"..... | 1,347.43 |
| T. 134 N., R. 41 W., 1,000 feet east of northwest corner of sec. 16, 20 feet south of road, 100 feet west of J. Chapman's house; copper nail in root of tree, marked "1350.5"..... | 1,348.97 |
| T. 134 N., R. 41 W., near northwest corner of sec. 15, 400 feet north of O. Bull's house on south side of road, painted "1360.3"..... | 1,358.80 |
| T. 134 N., R. 41 W., 0.5 mile west of northwest corner of sec. 15, at foot of guide-board post; iron post stamped "1366"..... | 1,364.272 |
| T. 134 N., R. 41 W., near southwest corner of SE. $\frac{1}{4}$ sec. 3; spike in base of telephone pole, marked "1340.8"..... | 1,339.270 |

WENDELL QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 96°-96° 15'.]

From point 2.5 miles west of Hereford, south to sec. 19, T. 129 N., R. 44 W.

| | |
|---|----------------------|
| Hereford, 2.5 miles west of, 30 feet south of Great Northern Ry., 0.5 mile west of grade crossing at the right-of-way line, west side of private road crossing; iron pipe (C. & G. S. b. m. C ₂)..... | Feet. 1, 028. 695 |
|---|----------------------|

From point 2.5 miles west of Hereford along highway west 2.5 miles, thence north 15.5 miles, thence east 1 mile, thence north 2 miles, thence east to point 6.7 mile east of Dayton dam, thence southwest to sec. 1, T. 131 N., R. 44 W., thence south 12.5 miles and east to Wendell, thence south 1.2 miles.

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|---|-------------|
| T. 130 N., R. 44 W., in southeast corner of sec. 31, 15 feet west and 25 feet north of center of crossroads; iron post stamped "1013"..... | 1, 011. 996 |
| T. 130 N., R. 44 W., in southeast corner of sec. 18, 50 feet west by 35 feet north of center of crossroads; iron post stamped "1019"..... | 1, 018. 044 |
| T. 131 N., R. 44 W., in southeast corner of sec. 31, 30 feet north by 30 feet west of center of crossroads; iron post stamped "1028"..... | 1, 026. 991 |
| T. 131 N., R. 44 W., in southwest corner of sec. 17, 25 feet north by 25 feet east of center of crossroads; iron post stamped "1044"..... | 1, 042. 155 |
| T. 132 N., R. 44 W., southeast corner of sec. 31, 15 feet north by 35 feet west of center of T road south; iron post stamped "1049"..... | 1, 047. 355 |
| T. 132 N., R. 44 W., in southeast corner of sec. 20, 20 feet west by 25 feet north of center of crossroads, in southeast corner of school lot; iron post stamped "1061"..... | 1, 059. 886 |
| T. 132 N., R. 44 W., in southeast corner of sec. 23, 30 feet west by 20 feet north of center of crossroads; iron post stamped "1088"..... | 1, 087. 033 |
| Dayton dam, north side of, in concrete masonry work, top of; third bolt from east end..... | 1, 111. 143 |
| T. 132 N., R. 43 W., at quarter corner north side of sec. 32, 60 feet northwest of residence of C. A. Littson, 150 feet southwest of schoolhouse at T road north; iron post stamped "1171"..... | 1, 169. 445 |
| T. 131 N., R. 44 W., at quarter corner east side of sec. 1, 30 feet west by 30 feet south of center of intersection of T road south; iron post stamped "1126"..... | 1, 124. 610 |
| T. 131 N., R. 43 W., in southwest corner of sec. 19, 35 feet north by 20 feet east of center of crossroads; iron post stamped "1114"..... | 1, 112. 736 |
| T. 131 N., R. 43 W., in southwest corner of sec. 30, 240 feet southwest of farmhouse, in base of small box-elder tree; spike..... | 1, 129. 55 |
| T. 130 N., R. 43 W., in southwest corner of sec. 6, 25 feet east by 25 feet north of center of crossroads; iron post stamped "1124"..... | 1, 122. 501 |
| T. 130 N., R. 43 W., in northwest corner of sec. 30, 20 feet west of center of intersection with T road east, on east side of Ash Lake; iron post stamped "1080"..... | 1, 078. 625 |
| Wendell, in northwest corner of public-school lot, 100 feet northwest of school building; iron post stamped "1151"..... | 1, 149. 368 |
| Wendell, 1.8 kilometers south of, 3.5 kilometers east of Hereford, 25 meters north of railroad, at right of way, west highway line, and southeast corner of meadow belonging to Arthur Smith; iron post (C. & G. S. b. m. B 2)..... | 1, 128. 712 |
| From southeast corner of sec. 30, T. 133 N., R. 44 W., north along highways to southwest corner of sec. 10, T. 133 N., R. 44 W. | |
| T. 132 N., R. 44 W., in southeast corner of sec. 20, 20 feet west by 25 feet north of center of crossroads, in southeast corner of school lot; iron post stamped "1061"..... | 1, 059. 886 |

T. 132 N., R. 44 W., 30 feet south by 25 feet east of southwest corner of sec. 10; iron post stamped "1094"..... Feet.
1, 092. 569

From point 1.8 miles south of Wendell along highways to north quarter corner of sec. 32, T. 133 N., R. 43 W.

T. 130 N., R. 43 W., northeast corner of sec. 34, 25 feet south by 25 feet west of center of line of travel at crossroads; iron post stamped "1118"..... 1, 116. 724

T. 130 N., R. 43 W., northwest corner of sec. 14, 25 feet south by 25 feet east of center of line of travel at crossroads; iron post stamped "1148"..... 1, 146. 158

T. 131 N., R. 43 W., northeast corner of sec. 34, 30 feet south by 20 feet west of center of line of travel at crossroads; iron post stamped "1146"..... 1, 144. 756

T. 131 N., R. 43 W., northwest corner of sec. 14, 15 feet east by 30 feet south of center of line of travel at crossroads; iron post stamped "1192"..... 1, 190. 882

T. 132 N., R. 43 W., 0.2 mile north of southeast corner of sec. 35, 15 feet north of road, near fence line; iron post stamped "1256"..... 1, 254. 848

T. 132 N., R. 43 W., north quarter corner of sec. 32, 60 feet northwest of C. A. Litson's, 150 feet southwest of schoolhouse at T road north; iron post stamped "1171"..... 1, 169. 455

From point 2.1 miles south of Fergus Falls to point one-fourth mile south of northeast corner of sec. 37, T. 133 N., R. 43 W.

Fergus Falls, 3.8 miles southeast of, 100 feet east of slough, 50 feet east of road, northwest corner of pasture owned by C. M. Anderson; iron post stamped "1170 Minn"..... 1, 168. 376

Anoka and White Bear quadrangles.

ANOKA, HENNEPIN, AND RAMSEY COUNTIES.

The elevations in the following list are based on various bench marks of the Mississippi River Commission in this locality. The elevation of the bench mark in the west end of doorsill at south entrance to basement of courthouse at St. Paul, Minn., which is a copper bolt marked "U. S. P. B. M. 72," is taken as 779.779 feet above mean sea level.

The leveling was done in 1899 by D. C. Wray.

WHITE BEAR QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 93°-93° 15'.]

From St. Paul north along Rice Street, thence east along roads to White Bear, thence south to St. Paul.

T. 29 N., R. 22 W., northwest corner of sec. 6; iron post stamped "St. P. 924"..... Feet.
924. 602

White Bear, in northwest corner of Catholic Church yard; iron post stamped "932 St. P."..... 933. 286

From White Bear north along highway to center of T. 33 N., R. 23 W., thence southwest to Minneapolis.

Centerville, at southeast corner of cemetery; iron post stamped "909 St. P." 909. 826

T. 32 N., R. 22 W., sec. 28, at southeast corner of schoolhouse yard (district 9), east side of road; iron post stamped "909 St. P."..... 909. 722

T. 31 N., R. 23 W., crossroads, 0.25 mile north of southeast corner of sec. 26; iron post stamped "910 St. P."..... 910. 921

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| T. 30 N., R. 23 W., in southeast corner of sec. 17, 1.5 miles north of New Brighton, at junction of road east with north-south road; iron post stamped "913 St. P."..... | Feet. 913. 539 |
|--|-------------------|

From Findley east to and north along Central Avenue to T. 33 N., R. 23 W., sec. 20.

| | |
|--|----------|
| T. 32 N., R. 23 W., center of sec. 20, at forks of Central Avenue and Anoka roads; iron post stamped "905 St. P."..... | 905. 501 |
|--|----------|

ANOKA QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 93° 15'-93° 30'.]

Bench mark east of Findley.

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| T. 30 N., R. 24 W., 0.2 mile west of center of sec. 14, east corner of school yard; iron post stamped "858 St. P."..... | 858. 565 |
|---|----------|

From T. 32 N., R. 23 W., west and south to Powell.

| | |
|--|----------|
| T. 32 N., R. 24 W., near center of sec. 26; on west line of schoolhouse yard, 50 feet north of east-west road; iron post stamped "891 St. P."..... | 891. 757 |
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| T. 31 N., R. 24 W., quarter corner north side of sec. 16, at southwest corner of crossroads; iron post stamped "869 St. P."..... | 869. 951 |
|--|----------|

From Anoka north 4 miles, thence southwest to river.

| | |
|--|----------|
| T. 32 N., R. 25 W., northwest corner of sec. 26, 50 feet east of crossroads; iron post stamped "892 St. P."..... | 893. 061 |
|--|----------|

From Anoka west along highway to Dayton, thence south to Rockford Road, thence east to Robinsdale, thence north to Anoka.

| | |
|---|----------|
| T. 120 N., R. 22 W., southeast quarter of sec. 17, in southwest corner of town hall of Dayton township; iron post stamped "912 St. P."..... | 912. 805 |
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|---|----------|
| T. 119 N., R. 22 W., near center of sec. 27, in southeast corner of school yard, northwest corner of crossroads; iron post stamped "942 St. P.".... | 943. 272 |
|---|----------|

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|--|----------|
| T. 118 N., R. 22 W., on north-south quarter line of sec. 14, at northeast corner of German Lutheran churchyard, 300 feet north of Rockford Road; iron post stamped "943 St. P."..... | 943. 795 |
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|---|----------|
| Robinsdale, on south line of Village Hall; iron post stamped "879 St. P.".. | 880. 027 |
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|---|----------|
| T. 119 N., R. 21 W., 0.25 mile east of southwest corner of sec. 21, in northwest corner of yard of Brooklyn town hall; iron post stamped "879 St. P.".. | 879. 248 |
|---|----------|

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|---|----------|
| T. 120 N., R. 21 W., quarter corner south side of sec. 30, northwest corner of school yard, east side of Champlain and Anoka roads; iron post stamped "883 St. P."..... | 883. 850 |
|---|----------|

Minnetonka and Mayer quadrangles.

CARVER AND HENNEPIN COUNTIES.

The elevations in the following list are based on bench marks of the Mississippi River Commission through leveling on the Anoka quadrangle.

The leveling was done in 1905 by H. Bucher.

MINNETONKA QUADRANGLE.

[Latitude, 44° 45'-45°; longitude, 93° 30'-93° 45'.]

From German Lutheran Church in sec. 14, T. 118 N., R. 23 W., southwest to point about 1 mile east of town of Wayzata and return.

| | |
|---|-------------------|
| T. 118 N., R. 22 W., 0.2 mile north of southeast corner of sec. 30, at southwest corner of crossroads, between two mail-box posts; iron post stamped "996 Adj. 1903"..... | Feet. 995. 553 |
|---|-------------------|

From Wayzata west along railroad and highway to sec. 34, T. 118 N., R. 24 W., thence southwest to St. Bonifacius.

| | Feet. |
|--|-------------|
| Fendale station, Great Northern Ry., 50 feet east of station; top of rail.. | 983. 9 |
| Long Lake station, at crossing; top of rail..... | 988. 3 |
| Long Lake station, on east side of wagon road, 20 feet north of track, 5 feet west of large telegraph pole; iron post stamped "989 Adj 1903"..... | 988. 077 |
| T. 118 N., R. 23 W., northwest corner of sec. 32, 0.2 mile from crossroads, on north side of Great Northern Ry., at northeast corner, 28 feet east of fence corner, 1 foot south of fence; iron post stamped "997 Adj 1903".. | 996. 089 |
| T. 118 N., R. 24 W., 0.1 mile east of northwest corner of sec. 35, at northwest corner of lawn of F. O. Johnson, in large white boulder on south side of road; aluminum tablet stamped "1024 Adj 1903"..... | 1, 023. 174 |
| T. 117 N., R. 24 W., 0.3 mile north of southwest corner of sec. 3, on north side of road, at northeast corner of crossroads, 10 feet west of large elm; iron post stamped "968 Adj 1903"..... | 967. 707 |
| T. 117 N., R. 24 W., northwest corner of sec. 17, at southwest corner of crossroads, 5 feet from fence corner; iron post stamped "967 Adj 1903".. | 966. 125 |
| T. 117 N., R. 24 W., 0.3 mile north of southwest corner of sec. 32, 0.6 mile south of St. Bonifacius, on east side of road, at southwest corner of Thomas Kohlman's yard, primary traverse post No. 7; iron post stamped "960 Adj 1903"..... | 959. 095 |

From St. Bonifacius east along highway and railroad to Excelsior, thence north to Wayzata.

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|---|-------------|
| T. 116 N., R. 24 W., northwest corner of sec. 3, at southeast corner of road intersection, 10 feet south of guidepost at corner; iron post stamped "1005 Adj 1903"..... | 1, 004. 168 |
| T. 116 N., R. 24 W., 0.3 mile north by 0.1 mile west of southeast corner of sec. 1, at southeast corner of schoolhouse, on north side of road, at intersection; iron post stamped "1020 Adj 1903"..... | 1, 019. 055 |
| Eureka station, 400 feet northeast of, in lower upright stone of stone culvert under fill, at west corner; aluminum tablet stamped "957 Adj 1903".... | 956. 157 |
| Excelsior schoolhouse, in top row of masonry of west wall, 4 feet north of southwest corner of building; aluminum tablet stamped "973 Adj 1903".. | 972. 495 |
| T. 117 N., R. 23 W., 0.1 mile north of southeast corner of sec. 24, in northeast corner of Deephaven schoolhouse grounds, south of north fence and 3 feet west of northeast corner; iron post stamped "984 Adj 1903"..... | 983. 712 |
| Northome, road crossing; top of rail..... | 939. 0 |
| Breezy Point, road crossing; top of rail..... | 953. 4 |
| T. 117 N., R. 22 W., 0.1 mile south of northeast corner of sec. 18, on west side of road, 22 feet north of track of Chicago, Milwaukee & St. Paul Ry., 22 feet east of cattle-guard fence, 9 feet northwest of crossing post; iron post stamped "964 Adj 1903"..... | 963. 742 |

From Excelsior south along highway to Shakopee, thence west along railroad, thence north to St. Bonifacius.

| | |
|--|----------|
| T. 116 N., R. 23 W., 300 feet south of northeast corner of sec. 1, on west side of road, primary traverse point No. 3; iron post stamped "Prim. Trav. Sta. No. 3, 957 Adj 1903"..... | 956. 908 |
| Chanhausen, in masonry abutment wall around St. Rupert's Church, 17 feet south of end of wall at church step, 6 feet north of gateway to garden; aluminum tablet stamped "976 Adj 1903"..... | 975. 293 |

| | |
|---|------------------|
| T. 116 N., R. 23 W., 0.1 mile north by 0.1 mile east of west quarter corner of sec. 36, 15 feet north of Minneapolis & St. Louis R. R., 100 feet west of railroad bridge over wagon road, primary traverse No. 4; iron post stamped "815 Adj 1903"..... | Feet. 814.850 |
| Shakopee, in masonry foundation of east wing of courthouse, 14 feet south of northeast corner of wing; aluminum tablet stamped "792 Adj 1903"..... | 791.411 |
| Chaska, 40 feet west of station, 15 feet north of track of Minneapolis & St. Louis R. R., Prim. Trav. Sta. No. 5; iron post stamped "728 Adj 1903"..... | 727.981 |
| T. 115 N., R. 23 W., SE. $\frac{1}{4}$ sec. 18, Carver station, on Chicago, Milwaukee & St. Paul R. R., on west side of public road, 20 feet south of main track, 4.5 feet south of crossing; iron post stamped "815 Adj 1903"..... | 814.635 |
| T. 115 N., R. 24 W., 0.1 mile south of northeast corner of sec. 15, on east side of public road, 34 feet south of Chicago, Milwaukee & St. Paul R. R. track, 18 feet west of fence; iron post stamped "981 Adj 1903"..... | 980.535 |
| T. 115 N., R. 24 W., southwest corner of sec. 9, at northeast corner of crossroads, 3 feet north of and 1.5 feet west of fence; iron post stamped "933 Adj 1903"..... | 932.578 |
| T. 116 N., R. 24 W., 0.2 mile west of southeast corner of sec. 34, southeast corner of crossing at Augusta station, on Chicago, Milwaukee & St. Paul R. R., 1 foot northwest of fence and 11 feet southwest of fence corner; iron post stamped "982 Adj 1903"..... | 981.926 |
| T. 116 N., R. 24 W., 0.1 mile north of south quarter corner of sec. 21, on east side of road, 34 feet south of private road west to house of F. J. Poppler, 1 foot west of fence and 14 feet north of 30-inch cottonwood tree; iron post stamped "1019 Adj 1903"..... | 1,018.494 |

MAYER QUADRANGLE.

[Latitude, 44° 45'-45"; longitude, 93° 48'-94".]

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|---|-----------|
| T. 116 N., R. 24 W., 0.1 mile west of north quarter corner of sec. 18, at southwest corner of grounds of Swedish Baptist Church, at northeast corner of road intersection, on line of fence, on east side of road; iron post stamped "1012 Adj 1903"..... | 1,011.073 |
|---|-----------|

Elk River and Rockford quadrangles.**HENNEPIN AND WRIGHT COUNTIES.**

The elevations in the following list are based on the precise leveling of the Mississippi River Commission through leveling on Minneapolis and Lake Minnetonka quadrangles; no connection was made at Dayton.

The leveling was done in 1907 by E. M. Bandli.

ROCKFORD QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 93° 30'-93° 45'.]

From point near Maple Plain northwest along highway and north to schoolhouse at northeast corner of sec. 15, T. 118 N., R. 24 W., thence east to sec. 25, T. 118 N., R. 23 W., thence south to sec. 30, T. 118 N., R. 23 W.

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|--|------------------|
| T. 118 N., R. 23 W., in northwest corner of sec. 32, 0.2 mile from crossroads, on north side of Great Northern Ry., 28 feet east of fence corner, 1 foot south of fence; iron post stamped "997 Adj 1903"..... | Feet. 996.065 |
| Maple Plain, T. 118 N., R. 24 W., near center of sec. 25, just west of station; railroad crossing, top of north rail..... | 1,012.5 |

| | |
|---|----------------|
| Armstrong, T. 118 N., R. 24 W., near west center of sec. 23, at road crossing; top of south rail of Great Northern R.R. | Feet. 985.6 |
| T. 118 N., R. 24 W., south center of sec. 4, 1 foot west of fence corner at southeast corner of crossroads; iron post stamped "1034" | 1,033.527 |
| T. 119 N., R. 24 W., east center of sec. 28, northwest corner of crossroads, 1 foot east of southeast corner of schoolhouse; iron post stamped "1035" | 1,034.401 |
| T. 119 N., R. 24 W., near northeast corner of sec. 15, southwest corner of crossroads, 1 foot from northeast corner of schoolhouse; iron post stamped "996" | 995.772 |
| T. 119 N., R. 23 W., near north center of sec. 18, Buschville, 90 feet west of southwest corner of crossroads, at corner of lane fence; iron post stamped "1011" | 1,011.271 |
| Corcoran, at Town Hall, T. 119 N., R. 23 W., near east center of sec. 16, in southeast corner of crossroads, 1 foot north by 1 foot east of; iron post stamped "1027" | 1,028.107 |
| T. 119 N., R. 23 W., east center of sec. 25, southeast corner of T road, 1 foot from fence, 6.5 feet south of corner; iron post stamped "979" | 978.895 |
| Hamel, T. 118 N., R. 23 W., near southeast corner of sec. 12; 50 feet north of Soo Line track and a few rods from station; iron post stamped "986" | 985.582 |
| T. 118 N., R. 22 W., near east center of sec. 30, northwest corner of T road intersection; iron post stamped "Prim. Trav. Sta. No. 2, C. R. 998, 1904." | 1,001.524 |
| From sec. 15, T. 119 N., R. 24 W., northwest and north to sec. 33, T. 121 N., R. 24 W., thence east to schoolhouse in sec. 31, T. 121 N., R. 23 W. | |
| T. 120 N., R. 24 W., northeast corner of sec. 4, in southeast corner of road intersection, 2 feet north from southeast corner fence post; iron post stamped "996" | 995.463 |
| T. 120 N., R. 24 W., north center of sec. 29, 10 feet east by 4 feet north of crossroads, near northeast corner fence post in northeast corner of T road intersection; iron post stamped "998" | 996.938 |
| T. 120 N., R. 24 W., near west center of sec. 9, in northeast corner of T road intersection, 5 feet south of southeast corner of schoolhouse, 1.5 feet east of southeast corner of hall; iron post stamped "963" | 962.726 |
| T. 121 N., R. 24 W., center of sec. 33, opposite T road intersection; iron post stamped "Prim. Trav. Sta. No. 10 974" | 973.771 |
| T. 121 N., R. 24 W., near southeast corner of sec. 35, in northwest corner of road crossing, 8 feet north of northwest corner fence post and 2 feet east of fence, in Great Northern R.R. right of way; iron post stamped "961" | 959.924 |
| T. 121 N., R. 23 W., NE. $\frac{1}{4}$ sec. 31, south side of schoolhouse, 3 feet east by 1 foot north of southeast corner of projecting entrance of hall; iron post stamped "950" | 957.830 |
| From Dayton south along highway to sec. 25, T. 119 N., R. 23 W. | |
| Dayton, west of, T. 121 N., R. 23 W., east center of sec. 36, at northeast corner of bridge across Crow River, 6 feet west of lamp-post; aluminum tablet stamped "864" | 863.767 |
| T. 120 N., R. 23 W., southwest corner of sec. 30, 3 feet north of telegraph pole, east of T road, south of Great Northern R. R.; iron post stamped "958" | 958.157 |
| T. 119 N., R. 23 W., east center of sec. 12, 3 feet northwest of southwest corner fence post, in southwest corner of crossroads; iron post stamped "939" | 938.051 |

ELK RIVER QUADRANGLE.

[Latitude, $45^{\circ} 15' - 45^{\circ} 30'$; longitude, $93^{\circ} 30' - 93^{\circ} 45'$.]

From sec. 31, T. 121 N., R. 23 W., east to Dayton.

| | |
|--|-------------------|
| T. 121 N., R. 23 W., southwest corner of sec. 26, 2 feet west of northeast corner fence post, at T road intersection; iron post stamped "880"..... | Feet. 879. 407 |
|--|-------------------|

Center City and St. Croix Dalles quadrangles.

CHISAGO COUNTY.

The elevations in the following list are based upon P. B. M. 29A of the precise leveling of the Engineer Corps, United States Army, at the village of Wyoming, the elevation of which is 891.495 feet above mean sea level. From this point a double-rodged line of primary levels was run to Taylors Falls, the remainder of the work being based thereon. The bench marks in Wisconsin in the St. Croix Dalles quadrangle are given in Bulletin 570.

The leveling was done in 1897 by S. P. Connor.

CENTER CITY QUADRANGLE.

[Latitude, $45^{\circ} 15' - 45^{\circ} 30'$; longitude, $92^{\circ} 45' - 93^{\circ}$.]

From Chisago City east along Northern Pacific Ry. to Center City.

| | |
|---|---------|
| | Feet. |
| Chisago City, in southeast corner of station platform; copper nail..... | 922. 29 |
| Center City, in southwest corner of station platform; copper nail..... | 907. 30 |

ST. CROIX DALLES QUADRANGLE.

[Latitude, $45^{\circ} 15' - 45^{\circ} 30'$; longitude, $92^{\circ} 30' - 92^{\circ} 45'$.]

From Center City east along Northern Pacific Ry. to Taylors Falls.

| | |
|--|----------|
| Shafer, in front of station; top of rail..... | 941. 1 |
| T. 34 N., R. 19 W., SW. $\frac{1}{4}$ sec. 32, 100 feet west of railroad station at Shafer; iron post stamped "T F 941"..... | 942. 338 |
| Franconia, in front of station; top of rail..... | 910. 2 |
| Taylors Falls, opposite east door of station; top of platform..... | 799. 37 |
| Taylors Falls, in front of station; top of rail..... | 795. 6 |
| Taylors Falls, northwest corner of Hotel Cochecho, in front wall; bronze tablet stamped "T F 757"..... | 758. 090 |
| Taylors Falls, brick schoolhouse, 100 feet north of; bronze tablet in trap rock stamped "T F 890"..... | 891. 405 |
| Taylors Falls, 100 feet south of Taylors Falls Bridge tollhouse, in top of stone; bronze tablet stamped "T F 713"..... | 714. 330 |
| Taylors Falls, at boat landing, in flat trap rock; bronze tablet stamped "T F 703"..... | 704. 187 |
| Taylors Falls, southwest corner of street north of Inter-State Park office, in stone; bronze tablet stamped "T F 743"..... | 744. 105 |
| T. 35 N., R. 19 W., E. $\frac{1}{4}$ sec. 34, in front of Daubney's house, iron post stamped "T F 773"..... | 774. 027 |

Wahpeton quadrangle.

WILKIN COUNTY.

The elevations in the following list were determined by primary leveling. The elevations of two bench marks of this list were determined by the Coast and Geodetic Survey in 1906 and the list corrected to accord with the 1912 adjustment. The correction to Bulletin 469 elevations in this quadrangle in North Dakota is 1.435 feet to be subtracted.

The leveling was done in 1902 by W. R. Saxton.

WAHPETON QUADRANGLE.

[Latitude, $46^{\circ}46'30''$; longitude, $96^{\circ}30'37''$.]

From Breckenridge northeast along highway and Great Northern Ry. grade to northeast corner sec. 31, T. 135 N., R. 46 W., thence west 7 miles, north 2 miles, and west to Elnor, N. Dak.

| | |
|--|------------------|
| Breckenridge, west side of courthouse, in bottom step; bronze tablet stamped "966 W" | Feet. 965.143 |
| T. 133 N., R. 47 W., south side of sec. 35, at intersection of line between secs. 2 and 3; iron post stamped "967 W" | 966.777 |
| T. 134 N., R. 47 W., northwest corner of sec. 6, on southeast corner of crossroads; iron post stamped "951 W" (on spur line) | 950.360 |
| T. 135 N., R. 47 W., northwest corner of sec. 19, near a house on southeast corner of crossroads; iron post stamped "956 W" | 955.683 |
| From Breckenridge south along section line 2 miles west of east side of R. 47 W. to south side of T. 131 N. | |
| T. 131 N., R. 47 W., southeast corner of sec. 10, on northwest corner of crossroads; iron post stamped "969 W" (redetermined by Coast and Geodetic Survey) | 968.881 |
| T. 130 N., R. 47 W., northeast corner of sec. 3, at northwest corner of crossroads; iron post stamped "971 W" (redetermined by Coast and Geodetic Survey) | 970.113 |
| Aitkin, Brainerd, Cross Lake, Cuyuna, Deerwood, McGregor, Seavey, and Wealthwood quadrangles. | |

AITKIN AND CROW WING COUNTIES.

The elevations in the following list were determined by primary leveling and are based on United States Corps of Engineers bench marks corrected to agree with the Coast and Geodetic Survey 1912 adjustment of precise leveling.

The work was done in 1912 by J. M. Ray and E. C. Bibbee.

AITKIN QUADRANGLE.

[Latitude, $46^{\circ}30'45''$; longitude, $93^{\circ}30'03'45''$.]

From Aitkin east along Great Northern Ry. to point 4 miles east of Rosburg.

| | |
|---|--------------------|
| Aitkin, in cultivated field 0.5 meter (1.5 feet) west of fence, on west side of street leading to wagon bridge over Mississippi River, 11 meters (36 feet) south of fence corner on property of Hodgden and McDonald, and about 75 meters (246 feet) back from left bank of river; cap of iron pipe over M. R. C. b. m. 328.2 | Feet. 1,201.232 |
|---|--------------------|

| | |
|--|---------------------|
| Aitkin, 16 feet south of northwest corner of C. G. Peterson Mercantile Co.'s store, 116 feet south of Northern Pacific Ry. station; chiseled square on curbstone..... | Feet. 1, 210. 66 |
| Aitkin, 1 mile east of, 25 feet north of railroad, 12 feet west of property line at railroad crossing; spike in base of telegraph pole..... | 1, 224. 06 |
| Aitkin, 2 miles east of, 20 feet north of railroad, 60 feet west of private crossing, near telegraph pole at residence of L. Strum; highest point on granite rock..... | 1, 225. 43 |
| Aitkin, 3.1 miles east of, on west side of public road, 40 feet north of railroad, 6 feet southeast of property corner; iron post stamped "1235 Minn". | 1, 234. 464 |
| Aitkin, 4.1 miles east of, 25 feet north of railroad, 25 feet west of private road at railroad crossing; spike in base of telegraph pole..... | 1, 225. 12 |
| Aitkin, 5.1 miles east of, 1 mile west of Rossburg, opposite sign post marked "Rossburg Station 1 mi."; spike in base of telegraph pole..... | 1, 230. 36 |
| Rossburg, 100 feet east of station, 40 feet south of railroad, 12 feet west of road; iron post stamped "1240 Minn"..... | 1, 239. 932 |
| Rossburg, 1.1 miles east of, 20 feet south of railroad and 10 feet east of east line of road at railroad crossing; spike in base of telegraph pole..... | 1, 251. 83 |
| North rail, directly over the tunnel crossing of the Minneapolis, St. Paul & Sault Ste. Marie Ry..... | 1, 249. 1 |
| Rossburg, 2 miles east of, 30 feet north of railroad, 25 feet west of private crossing, 0.5 mile north of Longfellow schoolhouse; spike in base of telegraph pole..... | 1, 241. 12 |
| Rossburg, 3.1 miles east of, 20 feet south of railroad, 80 feet west of road at railroad crossing; spike in base of telegraph pole..... | 1, 239. 22 |

From point 4 miles north of Waldeck west to Esquagamah Lake.

| | |
|---|-------------|
| Waldeck, 4.9 miles northwest of, south side of road, 240 feet east of bridge over east fork of Little Willow River; spike in base of fence post..... | 1, 222. 93 |
| Lake Waukenabo; surface of water September 13, 1912..... | 1, 221. 1 |
| Waldeck, 5.6 miles northeast of, 10 feet south of trail, 100 feet south of Waukenabo Lake, at place where trail turns west; copper nail in root of elm tree..... | 1, 224. 18 |
| Waldeck, 6.6 miles northwest of, 10 feet south of trail; nail head in root of pine tree (Primary traverse station)..... | 1, 287. 24 |
| Waldeck, 7.4 miles northwest of, 25 feet east of forks of trail northwest and southwest around Lake Esquagamah, near northeast corner of sec. 17, T. 49 N., R. 26 W.; iron post stamped "1268 Minn"..... | 1, 268. 002 |
| Waldeck, 8.3 miles northwest of, 20 feet northwest of trail southwest around Lake Esquagamah and trail to east end of same; bolthead in root of pine tree blazed on south side (Primary traverse mark)..... | 1, 261. 37 |
| Lake Esquagamah; surface of water September 17, 1912..... | 1, 232. 55 |
| Lake Esquagamah, 555 feet northeast of, 25 feet south of trail; copper nail in root of pine tree..... | 1, 238. 43 |
| Lake Esquagamah, 0.6 mile northwest of, in front of J. L. Swanson's residence; copper nail in top of stump..... | 1, 253. 75 |

From Esquagamah Lake south to point 7.5 miles north of Pineknoll.

| | |
|---|-------------|
| Lake Esquagamah, 0.3 mile south of, 225 feet north of Frank Seth's residence, near northeast corner of sec. 24, T. 49 N., R. 27 W.; iron post stamped "Prim. Trav. Sta. No. 22, 1261 Minn"..... | 1, 260. 620 |
| Lake Esquagamah, 1.2 miles south of, 330 feet north of southwest corner of sec. 24, T. 49 N., R. 27 W.; copper nail in root of birch tree..... | 1, 241. 14 |

| | |
|---|---------------------|
| Lake Esquagamah, 2.1 miles south of, in forks of trail southwest-southeast; copper nail in top of stump..... | Feet. 1, 247. 48 |
| Lake Esquagamah, 2.6 miles south of, 150 feet west of "Lower dam" in west fork of Willow River, 20 rods south of northwest corner of sec. 31, T. 49 N., R. 26 W.; iron post stamped "1235 Minn"..... | 1, 235. 202 |
| Lake Esquagamah, 3.5 miles southwest of, 0.9 mile west of "Lower dam" in fork of Willow River, in small clearing; copper nail in root of pine stump..... | 1, 259. 39 |
| Pineknoll, 11.8 miles northeast of, north side of trail, in root on south side of blazed stump; bolt-head | 1, 277. 52 |
| Pineknoll, 11.1 miles northeast of, 5 feet south of trail, 1,950 feet east of Smith's old lumber camp; copper nail in top of stump..... | 1, 297. 69 |
| Pineknoll, 10.4 miles northeast of, north side of trail, at forks of road leading to G. R. Rice's old residence, 1,730 feet west of Smith's old lumber camp; nail in top of stump 2 feet in diameter..... | 1, 285. 57 |
| Pineknoll, 9.1 miles northeast of, south side of trail, in root on north side of large pine stump, blazed; bolt-head | 1, 281. 49 |
| Pineknoll, 7.7 miles north of, 100 feet north of where the Esquagamah trail crosses the east line of Ross Lake township, 20 feet east of line; bolt-head in root of 3-foot pine stump..... | 1, 289. 98 |

From Aitkin southwest 3.3 miles.

| | |
|---|-------------|
| Aitkin, 1.2 miles southeast of, on northeast corner of porch to Philip Watson's gin store; nail head..... | 1, 240. 47 |
| Aitkin, 1.7 miles south of, on Kimberly road, south side of road, 12 feet north of fence; iron post stamped "1268 Minn"..... | 1, 268. 061 |
| Aitkin, 2 miles south of, west side of road at junction of Clear Lake road and Wealthwood old trail; spike in base of telephone pole..... | 1, 246. 40 |
| Aitkin, 3.3 miles south of, on Aitkin-Wealthwood road, west side, 2 feet east of fence, near northeast corner of sec. 1, T. 46 N., R. 27 W.; iron post stamped "1259 Minn"..... | 1, 259. 065 |

From point 1.8 miles west of Valparaiso northwest to point 2.4 miles southeast of Aitkin.

| | |
|---|-------------|
| Valparaiso, 2.7 miles west of, southeast corner of T road south, 1,000 feet south to Jim Horton's residence; iron post stamped "1264 Minn"..... | 1, 264. 119 |
| Aitkin, 4.2 miles southeast of, on Clear Lake road, northwest corner of T road north; bolt-head in top of stump | 1, 243. 66 |
| Aitkin, 2.8 miles southeast of, southwest corner of T road south; spike in base of fence post..... | 1, 270. 80 |

From Aitkin west along Northern Pacific Ry. to sec. 28, T. 47 N., R. 27 W.

| | |
|---|-------------|
| Aitkin, at southwest corner of L on south side of Aitkin County courthouse, in second course of brick above foundation, 8 inches east of corner and 4 feet above ground; horizontal furrow in copper bolt, lettered "U. S. \ominus p. b. m." (Miss. R. Comm. b. m. courthouse) | 1, 215. 211 |
| Aitkin, 1 mile west of, 0.2 mile south of northeast corner of sec. 27, T. 47 N., R. 27 W., opposite "Station 1 mile" sign; copper nail in telegraph pole, painted "U. S. B. M. 1219.4"..... | 1, 219. 26 |
| Aitkin, 2 miles southwest of, 0.2 mile north of southwest corner of sec. 27, T. 47 N., R. 27 W., 500 feet south of Tom Finnerty's house and public highway, south side of track, 18 telegraph poles east of public crossing; copper nail in telegraph pole, painted "U. S. B. M. 1215.8"..... | 1, 215. 68 |

From Aitkin north 3.6 miles.

| | |
|--|----------------------|
| Aitkin, in cultivated field, 0.5 meter west of fence on west side of street leading to wagon bridge over Mississippi River, 11 meters south of fence corner on property of Hodgedon & MacDonald, 75 meters back from left bank of river; cap of iron post (over Miss. R. Comm. b. m. 328.2)..... | Feet. 1, 201. 232 |
| Aitkin, 1.5 miles north of, near west quarter corner of sec. 12, T. 47 N., R. 27 W., 1 mile north of bridge, 0.5 mile north of T road west, on east side of road; copper nail in telephone pole, painted "U. S. B. M. 1202.1"..... | 1, 201. 96 |
| T. 47 N., R. 27 W., southwest corner of sec. 1, 3 miles north of Aitkin, 150 feet north by 40 feet east of crossroads, 125 feet southwest of frame house, 15 feet east of road; iron post stamped "1203"..... | 1, 202. 768 |
| T. 47 N., R. 27 W., near southwest corner of sec. 2, 2 miles east of Pineknoll, 1.1 miles east of Little Willow bridge, 25 feet south of road, in clump of tamarack; copper nail in 5-inch tamarack, painted "U. S. B. M. 1203.3"..... | 1, 203. 25 |

From point 6.3 miles northwest of Kimberly southwest to Aitkin.

| | |
|---|-------------|
| Kimberly, 7.2 miles northwest of, east end of Lake Wilkins where road leaves lake shore, 50 feet south of lake, 12 feet south of trail; spike in root of 16-inch birch tree..... | 1, 219. 86 |
| Kimberly, 8.2 miles northwest of, 14 feet north of trail opposite old clearing; spike in root of birch tree..... | 1, 232. 34 |
| Aitkin, 13.1 miles northeast of, near southeast corner of T road east, opposite Gun Lake schoolhouse, near center of sec. 20, T. 48 N., R. 25 W.; iron post stamped "1236 Minn"..... | 1, 236. 015 |
| Aitkin, 12.2 miles northeast of, west side of road, at corner of fence, 325 feet north of Oscar Higman's residence; copper nail in top of pine stump..... | 1, 224. 57 |
| Aitkin, 11.2 miles northeast of, 14 feet south of road, in front of old barn, 250 feet east of old house; spike in root of white-pine stump..... | 1, 244. 85 |
| Aitkin, 10.4 miles northeast of, south side of road, 700 feet east of township line, 1,740 feet west of center of sec. 31, T. 48 N., R. 25 W.; iron post stamped..... | 1, 214. 886 |
| Aitkin, 9.8 miles northwest of; chiseled square on south abutment of concrete bridge over Rice River ditch..... | 1, 207. 50 |
| Aitkin, 8.8 miles northwest of, 15 feet south of road, 0.7 mile east of Rice River schoolhouse; spike in root of 3-foot pine stump..... | 1, 210. 34 |
| Aitkin, 8 miles northeast of, northeast corner of Rice River school yard, near northeast corner of SW. $\frac{1}{4}$ sec. 34, T. 48 N., R. 26 W.; iron post stamped "1207 Minn"..... | 1, 206. 648 |
| Aitkin, 7.1 miles northeast of, 12 feet north of road at lane leading to N. P. Villeneave's residence; bolt head in root of oak stump..... | 1, 204. 90 |
| Aitkin, 6.3 miles northeast of, 1,500 feet east of Philip Carty's residence, in center of north end of small bridge; nail head..... | 1, 203. 96 |
| Aitkin, 5.8 miles northwest of, north side of road, 2 feet south of fence corner, on west line of Philip Carty's farm, 1,300 feet west of residence, 0.2 mile southwest to northeast corner of sec. 8, T. 47 N., R. 26 W.; iron post stamped "1206 Minn"..... | 1, 205. 293 |
| Aitkin, 5.3 miles northeast of, 2 feet east of southeast corner of Lone Pine school yard; bolt head in root of stump..... | 1, 206. 64 |
| Aitkin, 4.5 miles northeast of, at T road south, on northeast corner of bridge; nail head..... | 1, 203. 17 |
| Aitkin, 4.1 miles northeast of, east side of public road, near southwest corner of sec. 8, T. 47 N., R. 26 W.; iron post (Miss. R. Comm., 1898, b. m.), U. S. G. S. value..... | 1, 203. 079 |

| | |
|---|---------------------|
| Aitkin, 2.8 miles northeast of, southeast corner of bridge over small creek; bolt in side of leaning maple tree..... | Feet. 1, 204. 23 |
| Aitkin, 2 miles northeast of, north side of road, 40 rods south of northeast corner of NW. $\frac{1}{4}$ sec. 19, T. 47 N., R. 26 W.; iron post stamped "Miss. R. Comm., 1898, b. m." stamped "1208 Minn.," U. S. G. S. value | 1, 207. 809 |
| Aitkin, 1.3 miles northeast of, 300 feet east of Taplin's residence, east side of road; highest point on granite rock..... | 1, 212. 91 |

From Waldeck northeast, thence southeast to Palisade.

| | |
|---|-------------|
| Waldeck, 1 meter (3 feet) west of east fence along State road on line with east-west fence, 4 meters (13 feet) north of Waldeck's house and post office, 30 meters (98 feet) northwest of house, 50 meters (164 feet) from right bank of river; cap on pipe (over Miss. R. Comm. b. m., Waldeck, 1898)..... | 1, 210. 913 |
| Waldeck, 1 mile north of, 15 feet east of road at trail east, near northwest corner of SW. $\frac{1}{4}$ sec. 35, T. 49 N., R. 26 W.; highest point on granite rock | 1, 221. 06 |
| Waldeck, 2.1 miles north of, 20 feet east of road at trail leading west; bolt-head in root of elm tree..... | 1, 221. 42 |
| Waldeck, 2.9 miles north of, northwest corner of T road east, 400 feet east of northwest corner of sec. 26, T. 49 N., R. 26 W., 700 feet south to J. T. Welch's residence; iron post stamped "1227 Minn" | 1, 226. 383 |
| Waldeck, 4.1 miles north of, 180 feet north of intersection of T road west, on west side of road, 15 feet east of fence, near northwest corner of sec. 25, T. 49 N., R. 26 W.; iron post stamped "Prim. Trav. Sta. No. 23, 1259 Minn" | 1, 258. 806 |
| Waldeck, 5.2 miles north of, 0.8 mile south of Waukenabo post office, 10 feet north of southeast corner of crossroads; chiseled square on large granite rock..... | 1, 246. 87 |
| Waldeck, 6 miles northwest of, north side of road, 400 feet southwest of Russell Ellis's residence, 120 rods west of northeast corner of sec. 14, T. 49 N., R. 26 W.; iron post stamped "1240 Minn" | 1, 239. 664 |
| Waldeck, 6.6 miles northeast of, 15 feet north of trail, opposite small corduroy bridge, in root of pine tree blazed on south side; copper nail..... | 1, 256. 75 |
| Waldeck, 7.8 miles northeast of, 4 feet north of trail, in root on south side of blazed tree; copper nail..... | 1, 243. 61 |
| Palisade, 3.9 miles north of, 125 feet south of bridge P 285 Q, east side of railroad, near right of way, near northeast corner of sec. 7, T. 49 N., R. 25 W.; iron post stamped "1245 Minn" | 1, 244. 800 |
| Palisade, 2.9 miles north of, 25 feet north of old railroad crossing, 40 feet north of bridge P 284 Q; spike in base of telegraph pole | 1, 232. 30 |
| Palisade, 2.2 miles north of, east end of culvert under railroad, opposite William Woodcock's residence, culvert marked "P 283 Q"; copper nail..... | 1, 226. 94 |
| Palisade, 1.1 miles north of, east side of west girder at northeast corner of iron bridge over Willow River, near southeast corner of sec. 16, T. 49 N., R. 25 W.; bolt-head on angle iron..... | 1, 225. 59 |

From point 3 miles east of Rosburg south 4.4 miles.

| | |
|---|------------|
| Rosburg, 2 miles east of, at T road south, 10 feet south of signpost marked "Dam Lake 4 mi., Kimberly 4 mi.," 500 feet east of schoolhouse Longfellow, southeast corner of T road south, near northwest corner of sec. 30, T. 47 N., R. 25 W.; bolt-head in pine stump..... | 1, 254. 71 |
| Rosburg, 3.1 miles southeast of, south side of road, 2 feet north of fence, in front of old house; chiseled square on large granite rock..... | 1, 268. 32 |

| | |
|---|-------------|
| Rosburg, 4.4 miles southeast of, south side of road, southwest corner of | Feet. |
| T trail west; nail in top of stump..... | 1, 260. 89 |
| Rosburg, 4.9 miles southeast of, north side of road, opposite trail leading to Charley Johnson's residence; iron post stamped "1261 Minn" | 1, 260. 287 |
| Rosburg, 5.9 miles southwest of, 5 feet south of public road, 50 feet west of | |
| T road south to Long Lake; bolt head in root of oak stump..... | 1, 238. 38 |

BRainerd QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 94°-94° 15'.]

From sec. 21, T. 46 N., R. 28 W., south to sec. 16, T. 45 N., R. 29 W.

| | |
|---|-------------|
| T. 46 N., R. 29 W., center of sec. 21, 0.5 mile west of Woods, 15 feet north by 150 feet east of T road south; iron post stamped "1270" | 1, 270. 581 |
| T. 46 N., R. 29 W., 125 feet north of southeast corner of sec. 20, 1.5 miles southwest of Woods, 800 feet west of A. Johnson's house, in southeast corner of wooden bridge; copper nail painted "U. S. B. M. 1258.4" | 1, 258. 44 |
| T. 46 N., R. 29 W., southeast corner of sec. 29, 2.5 miles southwest of Woods, 50 feet west of section corner stake, lone pine witness tree, on west side of road; copper nail in root of tree painted "U. S. B. M. 1253.8" | 1, 253. 86 |
| T. 46 N., R. 29 W., 600 feet north of south quarter corner of sec. 32, 3.7 miles southwest of Woods, 200 feet north of Northern Pacific Ry. crossing, 200 feet south by 20 feet east of T road south; iron post stamped "1260" | 1, 259. 893 |
| T. 45 N., R. 29 W., near south quarter corner of sec. 5, 5.2 miles northwest of Nokay Lake, 500 feet north of quarter corner, 40 feet east of road, on small knoll; copper nail in fence post, painted "U. S. B. M. 1265.9" | 1, 265. 94 |
| T. 45 N., R. 29 W., in SW. $\frac{1}{4}$ sec. 8, 4.1 miles northwest of Nokay Lake, 1,000 feet west of W. T. Dalton's house, 500 feet west of T road north, at T road south, 10 feet northeast of gate, on south side of road; copper nail in pine tree, painted "U. S. B. M. 1261.7" | 1, 261. 73 |
| T. 45 N., R. 29 W., 0.2 mile west of northeast corner of sec. 17, 3.2 miles northwest of Nokay Lake, 900 feet east of schoolhouse, 25 feet south of road, in clump of pines; copper nail in pine tree, painted "U. S. B. M. 1259.2" | 1, 259. 29 |
| T. 45 N., R. 29 W., northeast corner of sec. 16, 1.7 miles northwest of Nokay Lake, at section corner, in center of road; iron post stamped "Prim. Trav. Sta. No. 5, 1256, 1912" | 1, 256. 241 |

From Brainerd north to Merrifield.

| | |
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| Brainerd, in southeast corner of sanitarium (Northern Pacific Ry.) grounds, on right bank of river, at west end of Northern Pacific Ry. bridge over Mississippi River, 2 meters from east fence, 5 meters from south fence around sanitarium grounds; copper bolt in stone surmounted by iron pipe with cast-iron cap, lettered "U. S. E. B. M." (U. S. Engineers' bench mark), cap | 1, 212. 025 |
| Brainerd, 1.5 miles north of, 1 mile north of sanitarium, 0.3 mile north of creek, 30 feet north of forks in road; in root of jack pine tree, painted "U. S. B. M. 1165.1"; copper nail | 1, 165. 05 |
| Brainerd, 2.5 miles north of, near northwest corner of sec. 33, T. 134 N., R. 28 W., 0.4 mile south of schoolhouse, 30 feet north of forks in road; copper nail in 4-inch oak tree, painted "U. S. B. M. 1195.9" | 1, 195. 86 |
| T. 134 N., R. 28 W., near northwest corner of sec. 28, 3.7 miles north of Brainerd, 700 feet northeast of farmhouse (property of R. R. Wise), 30 feet west of turn in road, near gate; iron post stamped "1213" | 1, 213. 204 |

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| T. 134 N., R. 28 W., near northeast corner of sec. 28, 4.6 miles north of Brainerd, 1.5 miles west of Minnesota & International Ry. crossing, 150 feet east of T road north, 15 feet north of road; copper nail in telephone pole, painted "U. S. B. M. 1211.3" | Feet. 1, 211. 26 |
| T. 134 N., R. 28 W., near north quarter corner of sec. 27, 4 miles north of Brainerd, 70 feet east of crossroads; copper nail in 3-inch jack-pine tree, painted "U. S. B. M. 1229.9" | 1, 229. 83 |
| T. 134 N., R. 28 W., near center of sec. 23, 5.2 miles north of Brainerd, 0.4 mile northeast of Minnesota & International Ry. crossing, 30 feet east by 20 feet north of fork in road; iron post stamped "1229" | 1, 228. 565 |
| T. 134 N., R. 28 W., near southwest corner of sec. 14, 3.3 miles south of Merrifield, 70 feet west of public highway, on right of way of Minnesota & International Ry., 60 feet south of milepost 5; copper nail in telegraph pole, painted "U. S. B. M. 1204.0" | 1, 203. 93 |
| T. 134 N., R. 28 W., near west quarter corner of sec. 11, 2.1 miles south of Merrifield, 30 feet south by 20 feet west of T road west; copper nail in pine stump, painted "U. S. B. M. 1225.8" | 1, 225. 78 |
| Merrifield, 0.8 mile south of, south quarter corner of sec. 35, T. 135 N., R. 28 W., 10 feet north of gate, 20 feet west of road; iron post stamped "1221" | 1, 220. 817 |
| Merrifield, on west edge of right of way of Minnesota & International Ry., at east end of Long Lake, 12.5 meters west of center of track, 78 meters south of store end of post-office building belonging to E. Miles, 175 meters north of south end of Merrifield siding, 0.2 mile north of milepost 8 from Brainerd, 6 meters east of 16-inch jack pine bearing t.b.m. and 6 meters southeast of 18-inch Norway pine, both blazed with triangles facing pipe; tile and iron pipe (Miss. R. Comm. b. m.), cap on pipe | 1, 219. 597 |
| From Merrifield east to Mississippi River and return. | |
| Merrifield, 1.2 miles east of, near center of sec. 36, T. 135 N., R. 28 W., 0.3 mile southwest of point where road strikes lake, 3 feet north of road; copper nail in root of 10-inch Norway pine, marked "1217.9" | 1, 217. 76 |
| Merrifield, 2.2 miles northeast of, near southwest corner of sec. 30, T. 135 N., R. 27 W., 0.3 mile west of Pine River Road, 20 feet east of gate; copper nail in corner fence post, marked "1218.2" | 1, 218. 10 |
| Merrifield, 2.6 miles northeast of, near south quarter corner of sec. 30, T. 135 N., R. 27 W., 15 feet south by 15 feet west of T road west; iron post stamped "1221" | 1, 220. 488 |
| Merrifield, 3.5 miles northeast of, near southeast corner of sec. 29, T. 135 N., R. 27 W., 0.9 mile west of Pine River Road, 40 feet south of forks in road, 4 feet south of road; copper nail in 10-inch Norway pine, marked "1215.5" | 1, 215. 37 |
| T. 135 N., R. 27 W., near south quarter corner of sec. 32, 4.6 miles southeast of Merrifield, 500 feet east of Dingman's house, at forks of road, near two small lakes, 2 feet north of road; copper nail in 5-inch jack-pine tree, marked "1211.6" | 1, 211. 50 |
| T. 134 N., R. 27 W., near east quarter corner of sec. 4, 5.9 miles east of Merrifield, 0.2 mile west of Robbin's house, at edge of cultivated field, 10 feet north of road; copper nail in 5-inch oak tree, marked "1224.5" | 1, 224. 48 |
| Merrifield, 6.3 miles east of, point near Robbin's house and about 400 feet west of river | 1, 216. 66 |

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| Merrifield, 3 miles east of, near southeast corner of sec. 31, T. 135 N., R. 27 W., 0.9 mile east of Pine River Road, at small forks in road; copper nail in 4-inch pine tree, marked "1220.8" | Feet. 1, 220. 78 |
| Merrifield, 2 miles east of, near southwest corner of sec. 31, T. 135 N., R. 27 W., 2 feet south by 30 feet east of crossroads; copper nail in root of 10-inch white-pine tree, marked "1217.5" | 1, 217. 48 |
| From Brainerd south and east to sec. 22, T. 44 N., R. 29 W. | |
| Brainerd, on top of high bank, 600 meters below lower wagon bridge over Mississippi River, 300 meters back from left bank of river, at corner of fence near southwest corner of Third and Quinn streets, 5 meters north of south line of Quinn Street; tile and pipe (Miss. R. Comm. p. b. m. 313 2), cap on pipe..... | 1, 219. 272 |
| Brainerd, 1.1 miles south of, near south quarter corner of sec. 25, T. 45 N., R. 31 W., 400 feet south of "Station one mile" sign, at Minnesota & International Ry. crossing; copper nail in telegraph pole, marked "1216.1" | 1, 216. 02 |
| Brainerd, 1.9 miles south of, 0.2 mile north of southeast corner of sec. 31, T. 45 N., R. 30 W., 0.3 mile north of crossroads, 700 feet south of bridge, 20 feet east of road; copper nail in telephone pole, marked "1226.6" | 1, 226. 52 |
| Brainerd, 2.8 miles south of, 0.4 mile north of southwest corner of sec. 6, T. 44 N., R. 30 W., 0.6 mile south of crossroads, 85 feet northwest of John Bouck's house, 30 feet east of road, in northwest corner of yard; iron post stamped "1252" | 1, 251. 626 |
| Brainerd, 3.8 miles south of, 0.4 mile north of southeast corner of sec. 12, T. 44 N., R. 31 W., 0.4 mile north of crossroads and schoolhouse, 30 feet west of road; copper nail in telephone pole, marked "1222.1" | 1, 222. 06 |
| T. 44 N., R. 31 W., 0.2 mile south of north quarter corner of sec. 13, 4.8 miles south of Brainerd, 0.6 mile southwest of schoolhouse, 0.3 mile southwest of forks, 2 feet east of road; copper nail in 4-inch jack-pine tree, marked "1271.5" | 1, 271. 43 |
| T. 44 N., R. 31 W., 0.2 mile east of southwest corner of sec. 13, 3 feet south by 50 feet east of crossroads, 2 feet north of old fence; iron post stamped "1277" | 1, 277. 131 |
| T. 44 N., R. 31 W., southeast corner of sec. 13, 5.2 miles south of Brainerd, at crossroads, copper nail in telephone pole, marked "1258.4" | 1, 258. 32 |
| T. 44 N., R. 31 W., southeast corner of sec. 24, 6.2 miles south of Brainerd, at T road east; copper nail in telephone pole, painted "U.S.B.M. 1246.7" .. | 1, 246. 61 |
| T. 44 N., R. 30 W., southeast corner of sec. 19, 15 feet north of crossroads, 2 feet south of fence line; iron post stamped "1264" | 1, 263. 450 |
| T. 44 N., R. 30 W., northeast corner of sec. 29, at crossroads; copper nail in telephone pole, painted "1277.6" | 1, 277. 48 |
| T. 44 N., R. 30 W., southeast corner of sec. 29, 9.3 miles southeast of Brainerd, 20 feet north by 30 feet west of crossroads; copper nail in telephone pole, painted "1272.2" | 1, 272. 10 |
| T. 44 N., R. 30 W., northeast corner of sec. 33, 30 feet south by 30 feet west of crossroads; iron post stamped "Prim. Trav. Sta. No. 29, 1236, 1912" .. | 1, 235. 586 |
| T. 44 N., R. 30 W., 500 feet south of center of sec. 27, 600 feet south of T road east, on bridge over Mississippi River; copper nail in northwest corner, marked "1195.9" | 1, 195. 77 |
| Long Lake; surface of water October 2, 1912..... | 1, 191. 3 |
| T. 44 N., R. 30 W., near center of sec. 26, 200 feet east of old trail, 200 feet southeast of deserted log cabin, 900 feet east of John Fitzpatrick's house, 25 feet north of road; copper nail in telephone pole, marked "1229.3" .. | 1, 229. 22 |

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| T. 44 N., R. 30 W., 1,000 feet southeast of northwest corner of sec. 25, 600 feet northwest of S. H. Arrhos's house, 600 feet west of turn in road, 45 feet north of road; copper nail in root of 20-inch Norway pine tree, marked "1256.5"..... | Feet. 1, 256.39 |
| T. 44 N., R. 30 W., southeast corner of sec. 24, 0.5 mile west of crossroads, 30 feet northwest of 4-foot granite boulder in center of road, 10 feet north of road; iron post stamped "1295"..... | 1, 294.600 |
| T. 44 N., R. 29 W., near northeast corner of sec. 30, 0.5 mile east of crossroads, 500 feet west of gate, 6 feet north of road; copper nail in root of 14-inch oak witness tree, marked "1307.6"..... | 1, 307.44 |
| T. 44 N., R. 29 W., near northeast corner of sec. 29, 1.5 miles west of schoolhouse, on new graded road, 35 feet south of old road, in northwest corner of wooden bridge; copper nail marked "1303.9"..... | 1, 303.82 |
| T. 44 N., R. 29 W., 0.2 mile west of northeast corner of sec. 28, 0.7 mile west of schoolhouse, 200 feet west of crossroads, 3 feet north of road; copper nail in wooden culvert, marked "1313.8"..... | 1, 313.71 |
| From sec. 27, T. 44 N., R. 30 W., north to sec. 21, T. 46 N., R. 29 W. | |
| T. 44 N., R. 30 W., north quarter corner of sec. 27, 4.7 miles southeast of Brainerd, 20 feet south by 20 feet west of T road south, 100 feet northeast of Carl Wendt's house; iron post stamped "1244"..... | 1, 243.641 |
| Long Lake; surface of water October 4, 1912..... | 1, 191.6 |
| T. 44 N., R. 30 W., 300 feet south of northeast corner of sec. 22, 0.6 mile north of Long Lake, 300 feet south of T road west, on west side of road; copper nail in wooden culvert, marked "1255.4"..... | 1, 255.28 |
| T. 44 N., R. 30 W., northeast corner of sec. 15, 20 feet west of road at T road east; copper nail in telephone pole, marked "1283.7"..... | 1, 283.53 |
| T. 44 N., R. 30 W., 0.2 mile south of northeast corner of sec. 10, 120 feet north of forks in road, 30 feet west of road; copper nail in telephone pole, marked "1264.1"..... | 1, 263.97 |
| T. 44 N., R. 30 W., south quarter corner of sec. 2, 100 feet east by 25 feet north of forks in road, 0.5 mile west of crossroads, main forks; iron post stamped "1280"..... | 1, 279.813 |
| T. 44 N., R. 30 W., west quarter corner of sec. 1, 0.5 mile south of crossroads, 40 feet southeast of gate leading to O. Thelander's house, 15 feet east of road; copper nail in telephone pole, marked "1279.5"..... | 1, 279.41 |
| T. 45 N., R. 30 W., east quarter corner of sec. 35, 1 mile south of Oak Street road, 1,000 feet south of new frame house, 25 feet west of road, 3 feet northeast of fence corner; chiseled square on highest point of granite boulder, marked "1274.0"..... | 1, 273.82 |
| T. 45 N., R. 30 W., east quarter corner of sec. 26, 5 miles east of Brainerd, 25 feet south by 20 feet west of crossroads; iron post stamped "1255".... | 1, 255.031 |
| T. 45 N., R. 30 W., east quarter corner of sec. 23, 30 feet west of T road east; copper nail in prop of fence post, marked "1254.5"..... | 1, 254.33 |
| T. 45 N., R. 30 W., south quarter corner of sec. 14, at T road north, in guide-board reading "Brainerd 6 miles, Deerwood 12 miles"; copper nail marked "1253.2"..... | 1, 253.06 |
| T. 45 N., R. 30 W., north quarter corner of sec. 14, 30 feet west of T road east, 800 feet west of schoolhouse; iron post stamped "1228"..... | 1, 227.406 |
| T. 45 N., R. 30 W., north quarter corner of sec. 11, at crossroads, in guide-board reading "Rabbit Lake and Brainerd"; copper nail marked "1221.8"..... | 1, 221.65 |
| Sand Creek; bridge over..... | 1, 203.3 |
| Sand Creek; surface of water under bridge October 7, 1912..... | 1, 197.0 |

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| T. 45 N., R. 30 W., in NE. $\frac{1}{4}$ sec. 2, 0.2 mile northeast of Sand Creek bridge, 900 feet southwest of forks in road, 200 feet east of small culvert, 4 feet south of road; copper nail in root of 8-inch pine tree, marked "1212.8". | Feet. 1, 212. 61 |
| T. 46 N., R. 30 W., near center of sec. 36, 5 miles southwest of Woods, 2.1 miles southwest of A. Edward's house, 30 feet south by 15 feet east of forks in road, 15 feet south of 14-inch blazed Norway pine; iron post stamped "1232". | 1, 232. 267 |
| T. 46 N., R. 29 W., near center of sec. 30, 4 miles southwest of Woods, 1.1 miles southwest of A. Edward's house, 100 feet south of summit, 100 feet south of old fence line, 6 feet east of road; copper nail in root of 7-inch Norway pine, marked "1255.3". | 1, 255. 13 |
| T. 46 N., R. 29 W., in NE. $\frac{1}{4}$ sec. 30, 3.2 miles southwest of Woods, 0.4 mile southwest of A. Edward's house, 4 feet south of road; copper nail in root of 8-inch Norway pine tree, marked "1218.3". | 1, 218. 12 |
| T. 46 N., R. 29 W., near southeast corner of sec. 19, 2.4 miles southwest of Woods, 0.4 mile northeast of A. Edward's house, 20 feet south by 20 feet west of forks in road; iron post stamped "1234". | 1, 233. 909 |
| T. 46 N., R. 29 W., 0.2 mile west of east quarter corner of sec. 20, 1.5 miles west of Woods, 0.3 mile west of crossroads, 30 feet north of road; copper nail in root of 10-inch pine tree, marked "1234.0". | 1, 233. 89 |

CROSS LAKE QUADRANGLE.

[Latitude, 46° 30'-46° 45'; longitude, 94°-94° 15'.]

From sec. 29, T. 137 N., R. 26 W., south to sec. 12, T. 136 N., R. 26 W.

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| T. 137 N., R. 26 W., northwest corner of sec. 29, at crossroads near Fairfield Ball Park; copper nail in corner fence post, painted "1235.7". | 1, 235. 70 |
| T. 137 N., R. 26 W., southwest corner of sec. 29, 2.7 miles north of Little Pine River bridge, 100 feet southwest of schoolhouse (district 61), at crossroads; copper nail in root of 20-inch pine tree, painted "U. S. B. M. 1244.6". | 1, 244. 56 |
| T. 137 N., R. 26 W., west quarter corner of sec. 32, 2.2 miles north of Little Pine River bridge, 20 feet south of road at T road north; iron post stamped "Prim. Trav. Sta. No. 8, 1230, 1912". | 1, 230. 451 |
| T. 136 N., R. 27 W., in sec. 1, 0.9 mile northwest of Little Pine River bridge, 30 feet east by 40 feet north of forks in road; copper nail in 4-inch oak tree, painted "U. S. B. M. 1238.1". | 1, 238. 02 |
| T. 136 N., R. 26 W., 0.2 mile south of north quarter corner of sec. 7, 20 feet north of Little Pine River bridge, 2 feet west of road; copper nail in root of oak tree, painted "U. S. B. M. 1193.9". | 1, 193. 84 |
| Little Pine River; surface of water September 3, 1912. | 1, 187. 1 |
| T. 136 N., R. 26 W., near north quarter corner of sec. 18, 1.2 miles southeast of Little Pine River bridge, 40 feet south of schoolhouse (district number not given), 30 feet north of road at T road south, 2 feet south of fence; iron post stamped "1250". | 1, 250. 297 |

DEERWOOD QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 93° 45'-94°.]

From point near Cuyuna southwest to sec. 22, T. 46 N., R. 29 W.

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| Crosby, 0.8 mile northeast of, 130 feet southwest of switch to Ironton, near center of sec. 1, T. 46 N., R. 29 W.; copper nail in telegraph pole, painted "U. S. B. M. 1256.6". | 1, 256. 62 |
| Crosby, in front of station; top of rail. | 1, 264. 6 |

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| Crosby, on south side at west end of window sill of First National Bank building, 2.9 feet above sidewalk; chiseled square..... | Feet. 1, 264. 53 |
| Ironton, southwest corner of sec. 11, T. 46 N., R. 29 W., 500 feet southwest of school building, 15 feet south of forks in road; iron post stamped "1233"..... | 1, 232. 608 |
| T. 46 N., R. 29 W., center of sec. 15, 1.4 miles southwest of Ironton, 200 feet north of section center, 25 feet west of road; copper nail in poplar tree, painted "U. S. B. M. 1240.4"..... | 1, 240. 46 |
| T. 46 N., R. 29 W., center of sec. 22, 0.5 mile west of Woods, at T road north; copper nail in corner fence post, painted "U. S. B. M. 1284.1"..... | 1, 284. 16 |
| From sec. 14, T. 45 N., R. 29 W., south to sec. 22, T. 46 N., R. 29 W., thence east and north to sec. 3, T. 46 N., R. 29 W. | |
| T. 45 N., R. 29 W., northeast corner of sec. 16, 1.7 miles northwest of Nokay Lake, at section corner, in center of road; iron post stamped "Prim. Trav. Sta. No. 5, 1256, 1912"..... | 1, 256. 241 |
| T. 45 N., R. 29 W., northwest corner of sec. 14, 0.7 mile northwest of Nokay Lake, 0.4 mile west of schoolhouse, 45 feet south of road; copper nail in corner fence post, painted "U. S. B. M. 1272.7"..... | 1, 272. 73 |
| T. 45 N., R. 29 W., 400 feet south of north quarter corner of sec. 14, 40 feet south of Dickenson's store, Nokay Lake; copper nail in red fence post, painted "U. S. B. M. 1235.9"..... | 1, 235. 98 |
| Nokay Lake; surface of water July 23, 1912..... | 1, 227. 3 |
| T. 45 N., R. 29 W., 0.2 mile north of southeast corner of sec. 15, 1.1 miles southwest of Nokay Lake, 200 feet south of A. Tollefson's mail box, 25 feet west of road; copper nail in fence post, painted "U. S. B. M. 1239.5"..... | 1, 239. 60 |
| T. 45 N., R. 29 W., 0.2 mile west of southeast corner of sec. 22, 2.4 miles south of Nokay Lake, 25 feet north by 25 feet west of Y road; iron post stamped "1236"..... | 1, 236. 642 |
| T. 45 N., R. 29 W., 0.2 mile east of west quarter corner of sec. 27, 3.2 miles southwest of Nokay Lake, 25 feet north by 20 feet east of Y road; copper nail in old pine stump, painted "U. S. B. M. 1241.5"..... | 1, 241. 62 |
| Grave Lake; surface of water July 24, 1912..... | 1, 213. 6 |
| T. 45 N., R. 29 W., near northwest corner of sec. 34, 1.4 miles northwest of Flak, northwest side of Grave Lake, northwest corner of wooden bridge; copper nail in wooden beam, painted "U. S. B. M. 1217.6"..... | 1, 217. 71 |
| T. 45 N., R. 29 W., near southwest corner of sec. 34, 0.5 mile northwest of Flak, 100 feet southwest of J. Dye's house, 20 feet east of road; copper nail in telephone pole, painted "U. S. B. M. 1259.7"..... | 1, 259.78 |
| T. 44 N., R. 29 W., 0.2 mile south of north quarter corner of sec. 3, 0.2 mile southeast of Flak, 15 feet south by 10 feet east of T road south, 3 feet southeast of signboard "Plat Lake 15 miles"; iron post stamped "1284"..... | 1, 283. 869 |
| T. 44 N., R. 29 W., 1,000 feet northeast of center of sec. 10, 1.2 miles southeast of Flak, 100 feet south of J. W. Fallon's mail box, in northeast corner of wooden bridge; copper nail painted "U. S. B. M. 1278.9"..... | 1, 278. 97 |
| T. 44 N., R. 29 W., north quarter corner of sec. 15, 1.9 miles southwest of Flak, 25 feet east by 30 feet south of T road east; iron post stamped "1295"..... | 1, 295. 477 |
| T. 44 N., R. 29 W., 300 feet south of north quarter corner of sec. 22, 3 miles southeast of Flak, at gate leading to Will Love's house, 25 feet west of road in northeast corner of private bridge; copper nail painted "U. S. B. M. 1298.1"..... | 1, 298. 17 |
| T. 44 N., R. 29 W., south quarter corner of sec. 22, 4 miles southeast of Flak, 200 feet southeast of schoolhouse, on south side of road at T road north; iron post stamped "Prim. Trav. Sta. No. 4, 1325"..... | 1, 325. 726 |

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| T. 45 N., R. 28 W., 1.1 mile west of southeast corner of sec. 25, 2.7 miles southwest of Dykeman, 300 feet northwest of Augusta's deserted house, north side of road 10 feet north of fence corner; copper nail in oak stump, painted "U. S. B. M. 1325.1"..... | 1,325.16 |
| T. 45 N., R. 28 W., center of sec. 14, 1.4 miles southwest of Dykeman, at L road northwest northwest corner of first road, chiseled square on granite boulder, painted "U. S. B. M. 1317.1"..... | 1,317.23 |
| T. 45 N., R. 28 W., center of sec. 14, 1.4 mile south of Dykeman, 30 feet south of 10 feet west of fence corner; iron post stamped "1325"..... | 1,325.323 |
| Dykeman, 1.6 mile north of center of sec. 18, T. 44 N., R. 28 W., 10 feet west of road; copper nail in 1-foot pine stump, painted "U. S. B. M. 1322.1"..... | 1,322.31 |
| Dykeman, 1.4 mile northwest of east southwest corner of sec. 7, T. 44 N., R. 28 W., at T road north north side of swamp, south side of road; copper nail in telephone pole, painted "1311.1 U. S. B. M."..... | 1,311.22 |
| T. 45 N., R. 28 W., southwest corner of sec. 6, 2.4 miles northwest of Dykeman, 80 feet southwest of J. O. Huseby's house, 80 feet east of road; copper nail in telephone pole, painted "U. S. B. M. 1321.2"..... | 1,321.34 |
| T. 45 N., R. 28 W., near center of sec. 1, 3 miles northwest of Dykeman, at road northeast corner of triangle, iron post stamped "1318"..... | 1,318.482 |
| T. 45 N., R. 28 W., about center of NE $\frac{1}{4}$ sec. 6, 1.2 miles south of Esdon schoolhouse, 20 feet southeast of Berbe's house, at T road north; copper nail in telephone pole, painted "U. S. B. M. 1292.9"..... | 1,292.98 |
| T. 45 N., R. 28 W., 80 rods west of west quarter corner of sec. 32, 0.5 mile south of Esdon schoolhouse, 150 feet northwest of Dan Chord's house, 25 feet east of road; copper nail in fence post, painted "U. S. B. M. 1287.7"..... | 1,287.80 |
| T. 45 N., R. 28 W., north quarter corner of sec. 31, 0.2 mile west of Esdon schoolhouse, 30 feet north by 30 feet east of T road north; iron post stamped "1287"..... | 1,287.217 |
| Crooked Lake; surface of water July 27, 1912..... | 1,263.3 |
| T. 45 N., R. 28 W., 80 rods west of northeast corner of sec. 30, 1.3 miles north of Esdon schoolhouse, 15 feet east of road; copper nail in charred pine stump, painted "U. S. B. M. 1296.8"..... | 1,296.88 |
| T. 45 N., R. 28 W., near southeast corner of sec. 18, 2.5 miles north of Esdon schoolhouse, 80 feet southwest of A. Stafford's mail box, 20 feet west of road at T road west; copper nail in poplar tree, painted "U. S. B. M. 1305.9"..... | 1,305.96 |
| T. 45 N., R. 28 W., 0.2 mile southwest of northeast corner of sec. 17, 2.2 miles southwest of Bay Lake, 1 mile northeast of A. Stafford's mail box, 15 feet north of road, 6 feet southwest of oak tree 1 foot in diameter; iron post stamped "1301"..... | 1,301.150 |
| T. 45 N., R. 28 W., near center of sec. 9, 1 mile southwest of Bay Lake, 30 feet south by 15 feet east of T road east; copper nail in guideboard, painted "U. S. B. M. 1303.2"..... | 1,303.27 |
| Bay Lake; surface of water July 29, 1912..... | 1,260.2 |
| T. 45 N., R. 28 W., near east quarter corner of sec. 4, at Bay Lake, 200 feet southeast of E. W. Soule's house, 20 feet north of road at T road north; copper nail in telephone pole, painted "U. S. B. M. 1271.6"..... | 1,271.74 |
| T. 45 N., R. 28 W., northeast corner of sec. 4, 0.7 mile north of Bay Lake, 30 feet north of forks in road; copper nail in telephone pole, painted "U. S. B. M. 1304.3"..... | 1,304.38 |
| T. 46 N., R. 28 W., 50 feet north of southeast corner of sec. 28, 1.8 miles north of Bay Lake, 15 feet north of lone pine witness tree, 15 feet west of road, in mound of rocks; iron post stamped "1306"..... | 1,306.520 |

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| T. 46 N., R. 28 W., near northeast corner of sec. 28, 3.2 miles south of Deerwood, 100 feet east of forks of road; copper nail in telephone pole, painted "U. S. B. M. 1276.6" | Feet. 1, 276. 68 |
| T. 46 N., R. 28 W., near center of sec. 21, 2.2 miles south of Deerwood, 1.2 miles south of Minneapolis, St. Paul & Sault Ste. Marie Ry. crossing, 350 feet north of C. F. Peterson's mail box, on east side of road; copper nail marked in telephone pole, painted "U. S. B. M. 1269.4" | 1, 269. 50 |
| Deerwood, 1 mile south of, about the center of the NW. $\frac{1}{4}$ sec. 16, T. 46 N., R. 28 W., 75 feet southwest of Minneapolis, St. Paul & Sault Ste. Marie Ry. crossing, 50 feet west of road, near fence line; iron post stamped "1279" .. | 1, 279. 431 |
| Deerwood, 1 mile northeast of, 0.2 mile north of south quarter corner of sec. 9, T. 46 N., R. 28 W., 30 feet south by 25 feet east of public-road crossing; copper nail in telegraph pole, painted "U. S. B. M. 1282.5" | 1, 282. 62 |
| Deerwood, 1.9 miles northeast of, 0.2 mile east of northeast corner of sec. 9, T. 46 N., R. 28 W., at public crossing, 40 feet north by 50 feet east of; copper nail in telegraph pole, painted "U. S. B. M. 1262.8" | 1, 262. 86 |
| From Cedar Lake south to Mille Lac, thence west to sec. 6, T. 44 N., R. 28 W. | |
| Cedar Lake; surface of water August 2, 1912 | 1, 198. 6 |
| T. 47 N., R. 27 W., near south quarter corner of sec. 33, 4 miles southwest of Aitkin, 300 feet north of E. A. Gyde's cottage, 100 feet east of lake, 15 feet east of road, at Cedar Lake camping ground; copper nail in telephone pole 52, painted "U. S. B. M. 1207.8" | 1, 207. 69 |
| T. 46 N., R. 27 W., near west quarter corner of sec. 4, 40 feet south of forks in road, 2.6 miles north of old Dorris post office, 50 feet west of wooden bridge; copper nail in white-oak stump, painted "U. S. B. M. 1213.2" .. | 1, 213. 12 |
| T. 46 N., R. 27 W., near center of sec. 8, 1.3 miles north of old Dorris, 0.5 mile south of schoolhouse, 300 feet southeast of John C. Rom's house, 20 feet south of gate, 15 feet west of road; iron post stamped "1269" | 1, 269. 364 |
| T. 46 N., R. 27 W., near center of sec. 17, 0.5 mile northeast of old Dorris, 100 feet northeast of small wooden culvert, in deep ravine, 20 feet east of road; copper nail in old pine stump, painted "U. S. B. M. 1257.4" | 1, 257. 29 |
| Old Dorris, 450 feet southeast of post office, near north quarter corner of sec. 20, T. 46 N., R. 27 W., 75 feet southwest of church, 25 feet east of road, at T road west; copper nail in fence post, painted "U. S. B. M. 1304.1" | 1, 303. 96 |
| Old Dorris, 1 mile southwest of, near north quarter corner of sec. 29, T. 46 N., R. 27 W., at T road east, 15 feet southwest of schoolhouse (district 35); copper nail in large pine stump, painted "U. S. B. M. 1306.3" | 1, 306. 17 |
| T. 46 N., R. 27 W., near center of southeast quarter of sec. 30, 2.2 miles southwest of old Dorris, 0.2 mile south of T road south and guideboard, 20 feet west of quarter corner stake, 5 feet west of road, at fence corner; iron post stamped "1291" | 1, 291. 024 |
| T. 46 N., R. 27 W., near center of sec. 31, 3.4 miles northwest of Bennettville, 1.4 miles north of Dan Olson's, 80 feet north of L road northwest, on east side of road; copper nail in pine stump, painted "U. S. B. M. 1299.7" | 1, 299. 52 |
| T. 45 N., R. 27 W., near southwest corner of sec. 31, 2.5 miles northwest of Bennettville, 0.5 mile northwest of Dan Olson's house, 250 feet east of forks in road, on east side of road, at gate; copper nail in gatepost, painted "U. S. B. M. 1282.9" | 1, 282. 74 |
| T. 45 N., R. 27 W., near southeast corner of sec. 6, 1.2 miles northwest of Bennettville, 1,000 feet southeast of P. Reither's house, 150 feet west of T road north, 15 feet north of road, 20 feet south of gate; copper nail in large stump, painted "U. S. B. M. 1274.9" | 1, 276. 112 |

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| Farm Island Lake, surface of water August 6, 1912..... | 1, |
| Bennettville, 300 feet north of, at northeast corner of sec. 5, T. 45 N., R. 27 W., 100 feet south of Farm Island Lake, 40 feet northeast of turn in road; iron post stamped "Prim. Trav. Sta. No. 1, 1276, 1912"..... | 1, |
| Bennettville, 0.5 mile south of, northwest corner of sec. 16, T. 45 N., R. 27 W., at T road east; copper nail in telephone pole, painted "U. S. B. M. 1281.6"..... | 1, |
| T. 45 N., R. 27 W., 0.2 mile northeast of southwest corner of sec. 16, 1.8 miles southeast of Bennettville, 900 feet north of forks in road, 15 feet west of road; copper nail in telephone pole, painted "U. S. B. M. 1309.4".... | 1, |
| T. 45 N., R. 27 W., center of sec. 21, 1.5 miles north of Cutler, in wooden bridge on west side; copper nail painted "U. S. B. M. 1277.4"..... | 1, |
| Cutler, 0.9 mile north of, 0.2 mile west of southeast corner of sec. 21, T. 45 N., R. 27 W., 100 feet southwest of church, at T road east, 25 feet west of road; iron post stamped "1270"..... | 1, |
| Pine Lake; surface of water August 7, 1912..... | 1, |
| Cutler, 750 feet south of post office, near southeast corner of sec. 28, T. 45 N., R. 27 W., 15 feet east of road; copper nail in telephone pole, painted "U. S. B. M. 1268.7"..... | 1, |
| T. 45 N., R. 27 W., near southwest corner of sec. 33, 1.3 miles east of Nichols, 100 feet southwest of S. Toll's house, at T road north; copper nail in telephone pole, painted "U. S. B. M. 1266.7"..... | 1, |
| Nichols, 0.3 mile east of, 0.2 mile southeast of northwest corner of sec. 5, T. 44 N., R. 27 W., 100 feet southeast of Nichol's summer cottage, 80 feet north of Mille Lac, 30 feet north of road; iron post stamped "1260"..... | 1, |
| Mille Lacs Lake; surface of water August 8, 1912..... | 1, |
| Nichols, 0.7 mile southwest of, 0.2 mile northeast of southwest corner of sec. 6, T. 44 N., R. 27 W., at T road west; copper nail in telephone pole, painted "U. S. B. M. 1257.7"..... | 1, |
| T. 44 N., R. 28 W., 1,500 feet south of northeast corner of sec. 12, 1.5 miles north of Midland, 100 feet southeast of A. Barber's house, 100 feet west of road; iron post stamped "Prim. Trav. Sta. No. 3, 1273, 1912"..... | 1, |
| Borden Creek; surface of water August 10, 1912..... | 1, |
| Midland, 1,200 feet northeast of, near center of sec. 13, T. 44 N., R. 28 W., 15 feet east of Y road, 30 feet west of Mille Lacs Lake; copper nail in small oak tree painted "U. S. B. M. 1259.5"..... | 1, |
| T. 44 N., R. 28 W., northwest corner of sec. 13, 0.8 mile northwest of Midland, 0.4 mile south of Borden Creek bridge, 25 feet east of road; copper nail in telephone pole painted "U. S. B. M. 1260.8"..... | 1, |
| T. 44 N., R. 28 W., 0.2 mile southwest of northeast corner of sec. 11, 2.6 miles southeast of Neutral, 75 feet northwest of schoolhouse, 150 feet north of forks in road, 20 feet east of road; iron post stamped "1264".... | 1, |
| Borden Lake; surface of water August 10, 1912..... | 1, |
| T. 44 N., R. 28 W., 0.2 mile southwest of northeast corner of sec. 10, 1.6 miles east of Neutral, 200 feet west of F. Brown's cottage, 60 feet west of Borden Lake, 20 feet north of road; copper nail in telephone pole, painted "U. S. B. M. 1266.3"..... | 1, |
| Neutral, 0.6 mile east of, near west quarter corner of sec. 3, T. 44 N., R. 28 W., 100 feet northwest of forks in road, 15 feet south of road; copper nail in telephone pole painted "U. S. B. M. 1299.5"..... | 1, |
| Neutral, 100 feet west of post office, 0.2 mile east of center of sec. 4, T. 44 N., R. 28 W., 35 feet north of road, 2 feet south of fence; iron post stamped "1280"..... | 1, |

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| Neutral, 1 mile west of, 0.5 mile northwest of east quarter corner of sec. 5, T. 44 N., R. 28 W., 500 feet east of S. Varner's house, 15 feet south of road; | Feet. |
| copper nail in telephone pole painted "U. S. B. M. 1286.0" | 1, 285. 76 |

CUYUNA QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 93° 45'–94°.]

From sec. 3, T. 136 N., R. 27 W., north to sec. 2, T. 43 N., R. 27 W.

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| T. 136 N., R. 27 W., near southwest corner of sec. 3, 0.8 mile east of Pineknoll, on bridge across Little Willow River, on south side; copper nail painted "U. S. B. M. 1200.8" | 1, 200. 69 |
| T. 136 N., R. 27 W., 0.2 mile north of southwest corner of sec. 4, 500 feet north of Pineknoll, 130 feet southwest of schoolhouse, 20 feet east of road, inside fence; iron post stamped "1206" | 1, 205. 584 |
| T. 136 N., R. 17 W., in sec. 5, 1.2 miles northwest of Pineknoll, on bridge over small creek, south side of road, in middle of span; copper nail painted "U. S. B. M. 1201.2" | 1, 201. 11 |
| T. 136 N., R. 25 W., south quarter corner of sec. 12, 2.4 miles northwest of Pineknoll, 20 feet north by 30 feet west of T road west; iron post stamped "1213" | 1, 213. 231 |
| T. 136 N., R. 25 W., south quarter corner of sec. 11, 3.4 miles northwest of Pineknoll, at crossroads; copper nail in south end of wooden culvert, painted "U. S. B. M. 1216.7" | 1, 216. 63 |
| T. 136 N., R. 25 W., 0.2 mile north of south quarter corner of sec. 2, 4.6 miles northwest of Pineknoll, at forks in Ross Lake road, 7 feet east of F. O. Draper's mail box; iron post stamped "1275" | 1, 275. 414 |
| T. 136 N., R. 25 W., near northwest corner of sec. 1, 0.8 mile north of Ross Lake and Little Pine road forks, on west side of road, 30 feet southwest of road forks; chiseled square on granite boulder, painted "U. S. B. M. 1280.4" | 1, 280. 36 |
| T. 137 N., R. 25 W., in sec. 36, 3.1 miles south of Keeler's schoolhouse, in deep ravine, southeast corner of wooden culvert; copper nail painted "U. S. B. M. 1238.0" | 1, 237. 87 |
| T. 137 N., R. 25 W., near east quarter corner of sec. 26, 2.3 miles south of Keeler's schoolhouse, 400 feet east of Stark Lake, northeast corner of hay meadow, 20 feet west of road; iron post stamped "1270" | 1, 269. 782 |
| T. 137 N., R. 25 W., near north quarter corner of sec. 26, 1.4 miles south of Keeler's schoolhouse, 0.4 mile south of wooden bridge, on west side of road; copper nail in root of 3-inch charred pine stump, painted "U. S. B. M. 1278.8" | 1, 278. 74 |
| T. 137 N., R. 25 W., 0.2 mile west of center of sec. 23, 0.7 mile south of Keeler's schoolhouse, 1,100 feet south of bridge, on west side of road; copper nail in 18-inch maple stump painted "U. S. B. M. 1279.3" | 1, 279. 18 |
| T. 137 N., R. 25 W., 0.2 mile east of northwest corner of sec. 23, 120 feet northwest of Keeler's schoolhouse, at T road south, 30 feet north of road; iron post stamped "1295" | 1, 294. 927 |
| Ross Lake; surface of water August 24, 1912 | 1, 238. 4 |
| Keeler's schoolhouse, 1 mile west of, near north quarter corner of sec. 22, T. 137 N., R. 25 W., 0.5 mile west of Simpson's sawmill, south edge of road; copper nail in root of 5-inch tamarack painted "U. S. B. M. 1243.9" | 1, 243. 85 |
| Mud Brook schoolhouse, 1.1 miles southeast of, near north quarter corner of sec. 20, T. 137 N., R. 25 W., 20 feet north of road; copper nail in 8-inch dead basswood tree painted "U. S. B. M. 1237.4" | 1, 237. 34 |
| Mud Brook; surface of water at bridge August 24, 1912 | 1, 218. 0 |

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| Mud Brook schoolhouse, 150 feet southwest of, near west quarter corner of sec. 17, T. 137 N., R. 25 W., 250 feet northeast of P. Gustafson's house, 40 feet west of road; iron post stamped "1242" | Feet. 1,242. 119 |
| Mud Brook schoolhouse, 1.1 miles northwest of, near southwest corner of sec. 8, T. 137 N., R. 25 W., 250 feet northwest of M. Bell's house, at T road west, on east side of road; copper nail in north gatepost painted "U. S. B. M. 1256.2" | 1,256. 16 |
| Mud Brook schoolhouse, 2 miles north of, near southwest corner of sec. 5, T. 137 N., R. 25 W., 350 feet north of small log culvert, 25 feet west of road; copper nail in root of pine tree painted "U. S. B. M. 1277.7" | 1,277. 67 |
| Little Pine schoolhouse, 2.6 miles southwest of, near south quarter corner of sec. 32, T. 138 N., R. 25 W., 400 feet south of E. Hill's cabin, 12 feet west of mail box, 20 feet north of road; iron post stamped "1274" | 1,274. 360 |
| Little Pine schoolhouse, 1.5 miles southwest of, center of NE. $\frac{1}{4}$ sec. 32, T. 138 N., R. 25 W., 0.2 mile north of Frank Carter's house, 35 feet northwest of L road southeast; chiseled square on large granite boulder painted "U. S. B. M. 1282.3" | 1,282. 20 |
| Little Pine schoolhouse, 0.9 mile south of, 0.1 mile north of southwest corner of sec. 28, T. 138 N., R. 25 W., 700 feet northeast of Sinclair's house, 10 feet west of road; copper nail in corner fence post painted "U. S. B. M. 1275.2" | 1,275. 18 |
| Little Pine schoolhouse, 100 feet north of, 35 feet south by 25 feet east of T road south, northwest corner of sec. 28, T. 138 N., R. 25 W., iron post stamped "Prim. Trav. Sta. No. 10, 1280, 1912" | 1,279. 752 |
| Little Pine schoolhouse, 1.1 miles east of, 0.2 mile north of southwest corner of sec. 22, T. 138 N., R. 25 W., 100 feet north of Lows Lake, 15 feet north of road; chiseled square on granite boulder painted "U. S. B. M. 1274.6" | 1,274. 50 |
| Lows Lake; surface of water August 27, 1912 | 1,267. 7 |
| Little Pine schoolhouse, 2.1 miles east of, southeast corner of sec. 22, T. 138 N., R. 25 W., 35 feet north by 25 feet west of crossroads; copper nail in notice post painted "U. S. B. M. 1285.6" | 1,285. 58 |
| Little Pine schoolhouse, 3 miles east of, 350 feet west of northeast corner of sec. 26, T. 138 N., R. 25 W., 90 feet north of T. Kramer's house, 20 feet south of road, 3 feet south of fence; iron post stamped "1295" | 1,295. 326 |
| Little Pine schoolhouse, 4.3 miles east of, 10 feet north of trail, 150 feet southwest of Charles Higgle's residence; copper nail in top of stump | 1,305. 56 |
| Little Pine schoolhouse, 4.7 miles east of, 30 feet east of Crow Wing-Aitkin county line, 400 feet north of northwest corner of sec. 9, T. 49 N., R. 27 W., 600 feet south of A. W. Kilgore's residence; copper nail in root of pine tree | 1,316. 80 |
| Little Pine schoolhouse, 5.8 miles east of, in forks of trail and graded road (trail leads to S. Starry's residence); copper nail in top of stump | 1,328. 13 |
| Esquagamah Lake, 2.5 miles northwest of, 80 rods north of Esquagamah schoolhouse, near northeast corner of sec. 10, T. 49 N., R. 27 W.; iron post stamped "1304 Minn" | 1,303. 452 |
| Esquagamah Lake, 1.3 miles northwest of, south side of trail, 250 feet southeast to old Gordon residence, near center of sec. 2, T. 49 N., R. 27 W.; chiseled square on granite rock | 1,273. 18 |
| From sec. 28, T. 138 N., R. 25 W., west and south to sec. 21, T. 137 N., R. 26 W. | |
| Little Pine schoolhouse, 1 mile west of, northwest corner of sec. 29, T. 138 N., R. 25 W., south end of wooden culvert, 3 feet south of road; copper nail painted "U. S. B. M. 1277.0" | 1,276. 92 |

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| Little Pine schoolhouse, 2.1 miles northwest of, near west quarter corner of sec. 19, T. 138 N., R. 25 W., 0.5 mile east of Little Pine River, 10 feet south of road; chiseled square on blue granite boulder painted "U. S. B. M. 1278.4"..... | Feet. 1,278.36 |
| Emily, 2.3 miles east of, 0.2 mile northwest of southeast corner of sec. 23, T. 138 N., R. 26 W., 135 feet west of Van Sickie Creek, 25 feet south of road; iron post stamped "1263"..... | 1,263.303 |
| Emily, 1.7 miles east of, near northwest corner of sec. 26, T. 138 N., R. 26 W., 10 feet north by 30 feet west of forks in road; copper nail in 30-inch pine stump, painted "U. S. B. M. 1278.2"..... | 1,278.12 |
| Emily, 0.7 mile east of, near southeast corner of sec. 27, T. 138 N., R. 26 W., 50 feet east by 20 feet south of forks in road; copper nail in fence post, painted "U. S. B. M. 1298.0"..... | 1,297.89 |
| Emily, 850 feet southwest of post office, 0.2 mile south of north quarter corner of sec. 34, T. 138 N., R. 26 W., 115 feet east of public schoolhouse, 25 feet east of road; iron post stamped "1292"..... | 1,291.969 |
| Inlet to Lake Emily; surface of water August 27, 1912..... | 1,248.0 |
| Emily, 1.2 miles south of, near center of sec. 3, T. 137 N., R. 26 W., at forks in road, in guideboard marked "Emily 1 mile"; copper nail painted "U. S. B. M. 1253.8"..... | 1,253.78 |
| Emily, 2.2 miles south of, near northwest corner of sec. 10, T. 137 N., R. 26 W., 150 feet east of deserted log cabin, 35 feet west of gate, 15 feet east of road; copper nail in corner fence post, painted "U. S. B. M. 1263.4"..... | 1,263.34 |
| Emily, 3.4 miles southwest of, near west quarter corner of sec. 10, T. 137 N., R. 26 W., 75 feet southwest of forks in road, 10 feet south of main road; copper nail in 3-inch pine tree, painted "U. S. B. M. 1232.1".... | 1,232.02 |
| Emily, 4 miles southwest of, near southwest corner of sec. 10, T. 137 N., R. 26 W., 0.4 mile south of corduroy road, 200 feet northwest of hay meadow and Little Pine River, in small clearing, 20 feet northwest of road; iron post stamped "1237"..... | 1,236.958 |
| T. 137 N., R. 26 W., near center of sec. 16, 1 mile northeast of guideboard marked "Emily 5 miles," 700 feet northeast of forks in road, 5 feet east of road; copper nail in 5-inch pine tree, painted "U. S. B. M. 1240.1".. | 1,240.01 |
| Emily, 5.9 miles southwest of, near west quarter corner of sec. 21, T. 137 N., R. 26 W., 1 mile east of J. Bennett's house, at forks in road, 15 feet north of road, 3 feet north of guideboard marked "Emily 5 miles"; iron post stamped "1241"..... | 1,241.263 |

From sec. 17, T. 136 N., R. 26 W., south to Cayuna.

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| T. 136 N., R. 26 W., near north quarter corner of sec. 17, 0.9 mile east of schoolhouse, 30 feet north by 10 feet east of forks in road; copper nail in root of old pine snag, painted "U. S. B. M. 1261.0"..... | 1,260.93 |
| T. 136 N., R. 26 W., near center of sec. 16, 1.1 miles west of forks in main road, 1,500 feet north of wooden culvert, 5 feet north of road; chiseled square on granite boulder, painted "U. S. B. M. 1264.6"..... | 1,264.62 |
| T. 136 N., R. 26 W., near center of sec. 15, 15 feet west by 3 feet south of T road west; iron post stamped "1285"..... | 1,285.453 |
| T. 136 N., R. 26 W., near southwest corner of sec. 15, 60 feet north by 60 feet east of forks in road; copper nail in root of 5-inch poplar tree, painted "U. S. B. M. 1276.4"..... | 1,276.34 |
| Mississippi River bridge, 0.7 mile north of; point on another bridge..... | 1,214.7 |

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| T. 136 N., R. 26 W., near southwest corner of sec. 22, 1,000 feet north of large red stain gravel cut, 5 feet west of road, at base of small oak tree; chiseled square on blue granite rock, painted "U. S. B. M. 1230.6"..... | Feet. 1,230.57 |
| T. 47 N., R. 29 W., in sec. 24, 1,600 feet south of Mississippi River bridge, 20 feet north by 20 feet west of forks in road; iron post stamped "1217"..... | 1,216.893 |
| Cuyuna, 2 miles northwest of, in sec. 25, T. 47 N., R. 24 W., 1.3 miles south of Mississippi River bridge, 100 feet northwest of Rabbit Lake, 5 feet east of road; copper nail in 8-inch oak tree, painted "U. S. B. M. 1205.7"..... | 1,205.72 |
| Rabbit Lake; surface of water September 5, 1912..... | 1,198.0 |
| Cuyuna, 1 mile northwest of, 0.6 mile north of Minneapolis, St. Paul & Sault Ste. Marie Ry. crossing, in sec. 25, T. 47 N., R. 29 W., 150 feet east of small lake, 5 feet west of road, 20 feet south of blazed 8-inch oak tree; copper nail in root of 4-inch poplar tree, painted "U. S. B. M. 1215.7"..... | 1,215.73 |

From sec. 21, T. 137 N., R. 26 W., east to sec. 17, T. 137 N., R. 25 W.

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| T. 137 N., R. 26 W., in sec. 22, 0.4 mile east of Little Pine River, 0.4 mile west of deserted house, 15 feet south of road; copper nail in root of 7-inch pine stump, painted "U. S. B. M. 1239.8"..... | 1,239.78 |
| T. 137 N., R. 26 W., in sec. 14, 1.6 miles east of Little Pine River, 550 feet southwest of road forks and signboard marked "Emily 5 miles, Aitkin 20 miles," 80 feet south of deserted house, 60 feet south of road; copper nail in corner fence post, painted "U. S. B. M. 1229.9"..... | 1,229.82 |
| Mud Brook; surface of water September 19, 1912..... | 1,205.4 |
| T. 137 N., R. 26 W., near north quarter corner of sec. 24, 1.2 miles west of Roger Lake, 2 feet south of road; copper nail in root of 12-inch oak tree; painted "U. S. B. M. 1273.1"..... | 1,273.01 |
| T. 137 N., R. 26 W., near northeast corner of sec. 24, 0.3 mile northwest of Roger Lake schoolhouse, 30 feet north by 20 feet west of T road west, 500 feet west of Roger Lake, 300 feet southeast of deserted log cabin; iron post stamped "1251"..... | 1,251.28 |
| T. 137 N., R. 25 W., in sec. 19, 0.7 mile east of Roger Lake schoolhouse, 0.6 mile west of forks in road, at turn in road, south edge of road; chiseled square on blue granite boulder, painted "U. S. B. M. 1254.2"..... | 1,254.17 |
| Mud Brook schoolhouse, 1 mile south of, near southwest corner of sec. 20, T. 137 N., R. 25 W., 0.6 mile north of road forks, east side of road, on small knoll; chiseled triangle on small blue granite boulder, painted "U. S. B. M. 1270.0"..... | 1,269.97 |

From point 2.3 miles northwest of Pineknoll northeast 3.8 miles to northeast corner of sec. 16, T. 48 N., R. 27 W.

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| Pineknoll, 2.3 miles northwest of, 20 feet north by 30 feet west of T road west, south quarter corner of sec. 12, T. 36 N., R. 25 W.; iron post stamped "1213"..... | 1,213.231 |
| Pineknoll, 3.5 miles north of, 12 feet south of trail where trail leaves southwest side of Terry Lake; bolthead in root of tree..... | 1,222.04 |
| Pineknoll, 4.6 miles northeast of, 4 feet west of trail; iron pin in root of stump "1213"..... | 1,232.21 |
| Pineknoll, 5.4 miles northeast of, 3 feet west of trail, in south side of leaning maple tree blazed; nail..... | 1,249.04 |
| Pineknoll, 6.1 miles northeast of, 300 feet southeast of E. R. Burkey's residence, 120 rods south of northeast corner of sec. 16, T. 48 N., R. 27 W., 300 feet north of Blind Lake, on section line; iron post stamped "1238".... | 1,238.063 |

From sec. 2, T. 47 N., R. 27 W., west along Northern Pacific Ry. and Minneapolis, St. Paul & Sault Ste. Marie Ry. to point near Cuyuna.

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| T. 47 N., R. 27 W., near southwest corner of sec. 28, 3 miles southwest of Aitkin, 30 feet north of T road north, 100 feet southeast of yellow school-house; iron post stamped "1229"..... | Feet. 1, 228. 409 |
| T. 47 N., R. 27 W., near southwest corner of sec. 29, 1 mile east of Cedar Lake, 1,000 feet east of public crossing; copper nail in southwest corner of bridge, painted "U. S. B. M. 1217.1"..... | 1, 216. 99 |
| T. 47 N., R. 27 W., 0.2 mile east of southwest corner of sec. 30, 750 feet northwest of Cedar Lake station, 35 feet south of road, in grove of poplars; Miss. R. Comm. triang. sta. Cedar Lake, stamped "1224"..... | 1, 223. 915 |
| Cedar Lake, 0.9 mile west of, near center of sec. 36, T. 47 N., R. 28 W., 30 feet south by 20 feet east of public road crossing; copper nail in telegraph pole, painted "U. S. B. M. 1219.3"..... | 1, 219. 28 |
| T. 47 N., R. 28 W., 0.2 mile north of southwest corner of sec. 36, 1.7 miles west of Cedar Lake, 35 feet south by 35 feet east of public road crossing on Northern Pacific Ry.; copper nail in telegraph pole, painted "U. S. B. M. 1221.6"..... | 1, 221. 54 |
| T. 46 N., R. 28 W., 0.2 mile south of northeast corner of sec. 3, 1.5 miles south of Iron Hub, 400 feet southeast of T road south, 50 feet south of private railroad crossing; copper nail in telegraph pole, painted "U. S. B. M. 1245.6"..... | 1, 245. 57 |
| T. 47 N., R. 28 W., 1,500 feet north of southeast corner of sec. 34, 150 feet north of east-west lane leading to Fred Imer's house; south of Iron Hub; copper nail in telephone pole, painted "U. S. B. M. 1243.9"..... | 1, 243. 87 |
| Iron Hub, 0.1 mile south of, northwest corner of sec. 35, T. 47 N., R. 28 W., 40 feet south by 30 feet east of crossroads, 75 feet northwest of school-house; iron post stamped "1249"..... | 1, 248. 618 |
| Iron Hub, 500 feet west of Minneapolis, St. Paul & Sault Ste. Marie station, 100 feet west of highway, 50 feet south of railroad; copper nail in telegraph pole, painted "U. S. B. M. 1237.2"..... | 1, 237. 21 |
| Iron Hub, 1 mile west of, 0.1 mile north of southwest corner of sec. 27, T. 47 N., R. 28 W., 100 feet east by 30 feet north of public crossing; copper nail in telegraph pole, painted "U. S. B. M. 1233.5"..... | 1, 233. 47 |
| Cuyuna, 1.6 miles east of, 0.2 mile north of southwest corner of sec. 28, T. 47 N., R. 28 W., two telegraph poles west of culvert A 296 R; copper nail in telegraph pole, painted "U. S. B. M. 1241.7"..... | 1, 241. 68 |
| Cuyuna, 0.5 mile east of, near east quarter corner of sec. 31, T. 47 N., R. 28 W.; copper nail in telegraph pole, painted "U. S. B. M. 1233.2"..... | 1, 233. 16 |
| Cuyuna, in front of station; top of north rail of Minneapolis, St. Paul & Sault Ste. Marie Ry..... | 1, 251. 8 |
| Cuyuna, 1,000 feet southwest of station, 150 feet southeast of section house, 20 feet north of road; iron post stamped "1272"..... | 1, 272. 328 |
| Cuyuna, 1.2 miles southwest of, 125 feet northeast of "Station One Mile" sign, near east quarter corner of sec. 36, T. 47 N., R. 29 W.; copper nail in telegraph pole, painted "U. S. B. M. 1272.0"..... | 1, 272. 04 |
| From northeast corner sec. 3, T. 47 N., R. 28 W., east 1 mile, thence north to Mississippi River. | |
| T. 47 N., R. 28 W., southwest corner of sec. 25, 1 mile southeast of Iron Hub, 70 feet north of Big Four saloon, at crossroads; copper nail in telephone pole, painted "U. S. B. M. 1229.4"..... | 1, 229. 45 |
| T. 47 N., R. 28 W., northeast corner of sec. 26, 2 miles northeast of Iron Hub, at T road west, west side of wooden culvert; copper nail painted "U. S. B. M. 1214.1"..... | 1, 214. 14 |

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| T. 47 N., R. 28 W., east quarter corner of sec. 23, 2.5 miles northeast of Iron Hub, 25 feet south by 25 feet west of crossroads; iron post stamped "1220"..... | Feet. 1, 220. 164 |
| T. 47 N., R. 28 W., east quarter corner of sec. 14, 3.5 miles northeast of Iron Hub, 0.4 mile south of crossroads, east side of road; copper nail in root of old poplar snag, painted "U. S. B. M. 1211.2"..... | 1, 211. 23 |
| T. 47 N., R. 28 W., east quarter corner of sec. 11, 4.4 miles northeast of Iron Hub, 300 feet north of gate leading to H. Felleman's house, north side of road; copper nail in root of pine stump, painted "U. S. B. M. 1214.7"..... | 1, 214. 77 |
| Dean Brook, 1.5 miles above, on south bank of river, on top of high bank, 8 meters from top, at east edge of cultivated field, 200 meters below house on north bank, in sec. 2, blazed 7-inch jack-pine tree, 278° distant 9 meters; (Miss. R. Comm. b. m. 324-2) iron pipe with cap stamped "1215"..... | 1, 214. 879 |

MCGREGOR QUADRANGLE.

[Latitude, 46° 30' 46" 45'; longitude, 93° 15' 53" 30'.]

From point 4 miles east of Rossburg east along Great Northern Ry. to Kimberly, thence northwest along highway 6.3 miles.

| | |
|---|-------------|
| Rossburg, 4.2 miles east of, 700 feet south of railroad, at northeast corner of public road and trail; iron post stamped "1247 Minn"..... | 1, 246. 344 |
| Kimberly, 1 mile west of, on south side of railroad, opposite signpost marked "Kimberly Station 1 mile"; spike in base of telegraph pole..... | 1, 240. 82 |
| Kimberly, 0.4 mile west of, on northeast corner of bridge 80 over Rice River; top of first drift bolt..... | 1, 234. 86 |
| Kimberly, 260 feet west of station, 15 feet east of public road, 65 feet north of railroad; iron post stamped "1244 Minn"..... | 1, 243. 144 |
| Kimberly, 1 mile north of, 2 feet north of wheel track, 25 feet north of lane leading to Peter Toasting's residence; highest point on granite rock..... | 1, 272. 61 |
| Kimberly, 2.5 miles north of, 2 feet north of wheel track, 25 feet north of gate leading to John Sward's residence; spike in root of pine stump 3 feet in diameter..... | 1, 232. 76 |
| Kimberly, 3.4 miles north of, 400 feet north of W. M. Marsh's residence, on east side of road, in corner of field, near center of sec. 35, T. 48 N., R. 25 W.; iron post stamped "1247 Minn"..... | 1, 246. 333 |
| Kimberly, 4.8 miles northwest of, on northwest corner of T road north, opposite residence of Charley Cumstock; highest point on large granite rock..... | 1, 245. 46 |
| Kimberly, 5.7 miles northwest of, 1,800 feet south of Swanson's residence, on west side of road; spike in top of pine stump..... | 1, 225. 80 |
| Kimberly, 6.3 miles northwest of, northwest corner of T road west; iron post stamped "Prim. Trav. Sta. No. 26"..... | 1, 220. 98 |

From Palisade to Strand.

| | |
|---|------------|
| Palisade, 150 feet east of station, 100 feet west of Palisade Hotel, on railroad right of way, near center of SE. $\frac{1}{4}$ sec. 22, T. 49 N., R. 25 W.; iron post stamped "1234 Minn"..... | 1, 233. 70 |
| Palisade, 1.2 miles southwest of, north side of State road, 2,500 feet east of James White's residence, near west line of sec. 27, T. 49 N., R. 25 W.; spike in base of corner fence post..... | 1, 215. 82 |
| From point 6 miles southeast of Rossburg south to point 3 miles north of Clear Lake. | |
| Rossburg, 6.1 miles southeast of, 90 feet north of Long Lake, east side of road, 2 feet west of fence, 350 feet east of residence; nailhead in root of pine stump..... | 1, 226. 23 |

| | Feet. |
|--|-------------|
| Long Lake; surface of water October, 1912..... | 1, 218. 4 |
| Roseburg, 8.6 miles southeast of, in forks of road, 500 feet south of Long Lake schoolhouse; iron post stamped "1235 Minn"..... | 1, 234. 969 |
| Clear Lake, 3.7 miles north of, east side of road, 2 feet west of fence, 400 feet south of residence; chiseled square on large granite rock..... | 1, 240. 51 |

SEAVEY QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 93° 15'-93° 30'.]

From Glen east and south to point near Malmo.

| | |
|--|-------------|
| Glen, 1 mile east of, at southwest corner of T road east, opposite Glen Union Church, near northeast corner of sec. 4, T. 45 N., R. 25 W.; bolthead in top of corner post..... | 1, 311. 23 |
| Glen, 1.8 miles southeast of, northeast corner of crossroads, 2 feet south of telephone pole, southwest corner of sec. 3, T. 45 N., R. 25 W.; nail head in stump..... | 1, 302. 15 |
| Malmo, 5.2 miles northeast of, 26 feet west of public road, 0.9 mile north of primary traverse station No. 18 mark; bolthead in top of pine stump ... | 1, 279. 19 |
| Malmo, 4.2 miles northeast of, southeast corner of sec. 16, T. 45 N., R. 25 W.; iron post stamped "Prim. Trav. Sta. No. 18, 1279, Minn"..... | 1, 278. 865 |
| Malmo, 4 miles northeast of, east side of road, opposite old house, 1,450 feet south of primary traverse station No. 18; iron post stamped "1300".... | 1, 300. 380 |
| Malmo, 3.2 miles northeast of, near southwest corner of sec. 22, T. 45 N., R. 25 W.; spike in telephone pole..... | 1, 265. 74 |
| Malmo, 1.2 miles east by 1 mile north of, east side of southwest corner of sec. 27, T. 45 N., R. 25 W.; nail head in center of small bridge..... | 1, 268. 86 |
| Malmo, 1.2 miles east of, southeast corner of crossroads, near northwest corner of sec. 3, T. 44 N., R. 25 W.; chiseled square on large granite rock in retaining wall..... | 1, 265. 68 |

WEALTHWOOD QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 93° 30'-93° 45'.]

From point 3.3 miles south of Aitkin south to Wealthwood.

| | |
|---|-------------|
| Aitkin, 4.7 miles south of, 100 feet south of John Jacob's residence, west side of road; chiseled square on granite rock..... | 1, 298. 00 |
| Aitkin, 5.3 miles south of, on east side of Wealthwood road, 2 feet west of fence, 50 feet north of lane leading to John Ledstrom's residence; highest point on granite rock..... | 1, 282. 69 |
| Aitkin, 6.5 miles south of, on Wealthwood road, southwest corner of T road west, 60 feet west of Hanging Kettle Lake, 40 rods west of northeast corner of sec. 24, T. 46 N., R. 27 W.; iron post..... | 1, 240. 410 |
| Aitkin, 7.5 miles south of, on Wealthwood road, south side, 620 feet east to J. E. Peterson's residence; bolthead in top of stump..... | 1, 234. 32 |
| Aitkin, 8.8 miles south of, south side of road, 2 feet north of fence opposite residence of Gus Malingren, at northeast corner of Alamo Park; bolthead in root of pine stump..... | 1, 281. 20 |
| Aitkin, 9.8 miles south of, 750 feet east of Lone Lake, north side of road, at T road south, near southwest corner of sec. 21, T. 46 N., R. 26 W.; iron post stamped "1279 Minn"..... | 1, 278. 446 |
| Wealthwood, 5 miles north of, west side of public road, in forks of trail southwest, 12 feet south of road, 300 feet northeast to old house; bolt-head in root of pine stump..... | 1, 267. 97 |
| Wealthwood, 3.8 miles north of, in forks of trail southeast, 13 feet east to public road; in root of pine stump; copper nail..... | 1, 270. 38 |

| | |
|---|----------------------|
| Wealthwood, 2.4 miles north of, east side of Wealthwood road, 0.2 mile north by 0.5 mile west to northwest corner of sec. 8, T. 45 N., R. 26 W., 350 feet south to Z. C. Copley's residence; iron post..... | Feet. 1, 264. 177 |
| Wealthwood, 1.7 miles north of, southwest corner of bridge over Mud River; bolthead | 1, 251. 73 |
| Wealthwood, 0.5 mile north of, east side of road; bolthead in top of oak stump, painted. | 1, 286. 72 |
| Wealthwood, 600 feet north of post office, southwest corner of T road east, in school yard; iron post stamped "Prim. Trav. Sta. No. 17" | 1, 272. 691 |
| Mille Lacs Lake; surface of water October 4, 1912..... | 1, 249. 1 |

From sec. 21, T. 46 N., R. 26 W., southeast to Clear Lake.

| | |
|---|-------------|
| Glory, 1 mile west by 1 mile north of, northeast corner of crossroads, 300 feet northwest to residence; bolthead in root of pine tree..... | 1, 271. 68 |
| Glory, 1 mile south by 0.5 mile east of, 620 feet east of Glory schoolhouse, in center and north side of bridge over Mud River; top of 1-inch iron rod. | 1, 246. 41 |
| Glory, 1.5 miles south by 1 mile west of, at T road east, near northeast corner of sec. 26, T. 46 N., R. 26 W.; iron post stamped "1265 Minn" | 1, 265. 413 |
| Clear Lake, 2.9 miles west of, 5 feet south of public road; nail in pine tree with blaze on north side, 1 foot above ground..... | 1, 284. 50 |
| Clear Lake, 2 miles northwest of, 15 feet north of public road, 700 feet north of August Johnson's residence, 350 feet west of small bridge; bolthead in root of pine tree..... | 1, 292. 74 |
| Clear Lake, 1.1 miles northeast of, 10 feet south of road, 1,100 feet east of northeast corner of sec. 30, T. 46 N., R. 25 W.; bolthead in root of stump.. | 1, 299. 63 |

From point 2.6 miles southeast of Clear Lake south and west to Glen.

| | |
|--|-------------|
| Clear Lake, 2.7 miles northeast of, 1.3 miles southwest of Long Lake, on west side of road, 5 feet south of fence, opposite small pond; chiseled square on large rock..... | 1, 265. 70 |
| Clear Lake, 1.6 miles north of, northwest corner of T road west, junction of Aitkin-Clear Lake road with Kimberly and Malmo roads, 40 rods south of northeast corner of sec. 20, T. 46 N., R. 25 W.; iron post stamped "1327 Minn" | 1, 326. 746 |
| Clear Lake, 0.6 mile north of, on east side of road, opposite trail west; bolthead in top of gate post..... | 1, 302. 82 |
| Clear Lake, 700 feet north of Clear Lake schoolhouse, 75 feet west of Lake, 5 feet west of road at forks, 900 feet north of southwest corner of sec. 28, T. 46 N., R. 25 W.; bolthead in root of large pine tree..... | 1, 299. 41 |
| Glen, 50 feet east of post office, south side of road, 1 foot north of fence, 75 feet east by 20 feet south of northwest corner of sec. 4, T. 45 N., R. 25 W.; iron post stamped "1303" | 1, 303. 256 |

From point near Malmo west to Wealthwood.

| | |
|--|-------------|
| Malmo, 0.2 mile east of, northeast corner of T road north, near southwest corner of sec. 33, T. 45 N., R. 25 W.; iron post..... | 1, 268. 460 |
| Malmo, 700 feet south of post office, 200 feet southwest of G. A. Malson's residence; bolthead in root of large oak tree..... | 1, 255. 75 |
| Mille Lacs Lake; surface of water October 15, 1912..... | 1, 249. 0 |
| Malmo, 0.9 mile northwest of, 100 feet north of road, 75 feet east of Kelmer Creek, on lake shore; nail in fence post. | 1, 251. 96 |
| Malmo, 1.5 miles northwest of, 300 feet north of Mille Lacs Lake, 200 feet west of E. A. Bushey's residence, 100 feet north of southwest corner of sec. 29, T. 45 N., R. 25 W.; iron post..... | 1, 258. 321 |

| | |
|--|---------------------|
| Malmö, 2.8 miles northeast of, 30 feet north of trail along lake, 100 feet north of lake; spike in base of telephone pole..... | Feet. 1, 255. 10 |
| Malmö, 4.2 miles west of, 150 feet north of Mille Lacs Lake, 40 feet north of road; spike in base of telephone pole..... | 1, 253. 46 |
| Wealthwood, 2.6 miles east of, northeast corner of T road north, near line between secs. 22 and 23, 200 feet north of lake, in T. 45 N., R. 26 W.; iron post..... | 1, 257. 877 |
| Wealthwood, 1.6 miles east of, 10 feet south of road, 40 feet north of lake; bolthead in south end of old drift log in sand | 1, 250. 84 |
| Wealthwood, 0.6 mile east of, 4 feet south of road along lake, 25 feet south of forks of road, 200 feet southeast of W. L. Butt's residence; highest point on granite rock..... | 1, 254. 42 |
| From point 1 mile north of Clear Lake northwest to point 2 miles west of Valparaiso. | |
| Erick, 1.8 miles southeast of, 15 feet south of road, west end of Rabbit Lake; bolthead in root of pine tree..... | 1, 278. 96 |
| Erick, 0.8 mile east of, southeast corner of Rabbit Lake school yard; bolthead in root of pine tree..... | 1, 297. 83 |
| Erick, south side of public road, 2 feet north of fence, 300 feet south to post office; iron post stamped "1260 Minn"..... | 1, 250. 442 |
| Erick, 1 mile west of, east side of road, at short turn; bolthead in top of pine stump..... | 1, 254. 81 |
| Erick, 1.7 miles west of, north side of road, 2 feet south of fence, 100 feet north of No. 12 Lake or Larson Lake, 250 feet west of John Larson's residence, 40 rods north by 15 rods west to northwest corner of sec. 12, T. 46 N., R. 25 W.; rock..... | 1, 246. 44 |
| Valparaiso, 300 feet west of post office, east side of road, 1 foot east of fence; iron post stamped "1250 Minn"..... | 1, 249. 545 |
| Valparaiso, 0.6 mile west of, in forks of Y road; bolthead in top of stump..... | 1, 250. 52 |
| Valparaiso, 1.6 miles west of, north side of road, 4 feet south of fence opposite lane leading to Geo. Dean's residence; bolthead in top of oak stump..... | 1, 250. 24 |
| Valparaiso, 1.8 miles west of, south side of road, at right-angle turn; iron post stamped "Prim. Trav. Sta. No. 2, Minn., 1251"..... | 1, 250. 413 |

Duluth and Superior quadrangles.

ST. LOUIS COUNTY.

The elevations in the following list were determined by primary leveling in 1914 by E. C. Bibbee, based on heights of bench marks of the Corps of Engineers, United States Army:

DULUTH QUADRANGLE.

[Latitude, 46° 45'–47°; longitude, 92°–92° 15']

Near Duluth.

| | |
|---|-------------------|
| Duluth, at eastern end of southern bent of posts, near north line of Railroad Street, on top surface of granite pedestal supporting an iron post of the Sixth Avenue viaduct over the railroad tracks; square of black paint 2 inches on a side (U. S. C. E. b. m. 23)..... | Feet. 609. 618 |
| Duluth, on Garfield Avenue, 350 feet south of Thompson Foundry Co., 65 feet south of south end of viaduct over railroad tracks, northeast side of street, on curb, 1 foot west of telephone pole 104; chiseled square... | 606. 88 |
| Duluth, south end of Garfield Avenue, on west side of street, on northeast corner of north pier of Omaha R. R. overhead crossing; chiseled square... | 606. 03 |

| | |
|---|------------------|
| Interstate bridge, at north end of, water surface of St. Louis Bay, Oct. 5, 1914..... | Feet. 603. 08 |
| Duluth, 400 feet east of, Mesabi Junction, on south side of Northern Pacific Ry., in top of signal-wire support; copper nail..... | 617. 20 |

SUPERIOR QUADRANGLE.

[Latitude, 46° 30'-46° 45'; longitude, 92°-92° 15'.]

From New Duluth northwest to Smithville, thence northeast to Duluth.

| | |
|--|-----------------|
| New Duluth, on north abutment at extreme west end of overhead railroad crossing of Northern Pacific and N. P. Ore. lines; chiseled square..... | 655. 19 |
| New Duluth, at northwest corner of Grand and Commonwealth avenues, at southeast corner of schoolhouse yard; iron post stamped "675 Minn"..... | 675. 300 |
| New Duluth or Gary, on northeast corner of north concrete pier on west side of Commonwealth Avenue at overhead crossing of Duluth, Mesabi & Northern R. R.; chiseled square..... | 676. 74 |
| Smithville, 0.96 mile southwest of, 100 feet south of point where old road crosses new concrete pike, 300 feet south of south line of sec. 27, 30 feet east of pike, in root of pine stump; copper nail..... | 681. 51 |
| Smithville, 1,476 feet northwest of station, 43 feet eastward from railroad track, 66 feet west of public road leading from Duluth to Fond du Lac, 156 feet northeastward from railroad section house. Iron post projecting 6 inches above ground, 148 feet southward from bench mark, marked "St. P. & D. R. R.," is said to be at northeast corner of SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 27, T. 49, R. 15; in vitrified clay slab in ground, surmounted by iron pipe; top of copper bolt (U. S. C. E. p. b. m. 2) (U. S. C. E. elevation 703.082)..... | (not recovered) |
| Over p. b. m. 2, described above, on top of pipe; top of cap (U. S. C. E. p. b. m. 2A) (U. S. C. E. elevation 707.062)..... | 707. 928 |
| NOTE.—Bibbee tied to this b. m. in 1914, but closed 1 foot high. He reran part of line but failed to find error, then continued line to Duluth and closed 0.2 foot high on b. m. 23 of U. S. C. E. | |
| Smithville, 0.77 mile east of, 15 feet north of railroad at road crossing, on west end of box culvert; copper nail..... | 676. 58 |
| Smithville, 1.66 miles east of, on Northern Pacific Ry., 255 feet east of milepost 145, on southeast corner of concrete base to signal 1451; chiseled square..... | 635. 40 |
| West Duluth, 7 feet north of railroad, 320 feet east of milepost 146, 50 feet west of Raleigh Street, on southeast corner of concrete foundation to signal 1461; chiseled square..... | 642. 44 |
| West Duluth, 410 feet east of Northern Pacific Ry. and Duluth, Winnipeg & Pacific R. R. overhead crossing, 10 feet north of Northern Pacific Ry., on top of most western concrete pier; bronze tablet, stamped "635 Minn"..... | 634. 707 |
| West Duluth, 115 feet east of milepost 148, 5 feet south of Northern Pacific Ry., directly opposite west end of Standard Oil Co.'s warehouse, 50 feet east of Second Street, on concrete pier; chiseled square..... | 630. 93 |
| Duluth, on Northern Pacific Ry., 5 feet south of south rail, directly opposite Duluth Brewing & Malting Co., in east rail support, 7 feet east of milepost 149; copper nail..... | 623. 41 |

APPENDIX A.

ELEVATIONS ADJUSTED BY THE COAST AND GEODETIC SURVEY FROM PRECISE LEVELING.

Ada, Aitkin, Albany, Alma, Angus, Anoka, Argyle, Ashby, Axel, Backus, Barnesville, Barrett, Belle Prairie, Beltrami, Bemidji, Bena, Boyd, Brainerd, Campbell, Carmon Falls, Carlton, Cass Lake, Center City, Clearwater, Cohasset, Collegeville, Crookston, Cross Lake, Cuyuna, Deer Lake, Duluth, Echo, Elk River, Fargo, Felton, Fergus Falls, Graceville, Hallock, Hawley, Kennedy, La Crescent, Lake Carlos, Lake City, Lake Crystal, Lake Elmo, Lake Itasca, Lake Washington, La Prairie, Little Falls, McGregor, Madelia, Madison, Mahtowa, Maiden Rock, Mankato, Milan, Mildred, Minneapolis, Montevideo, Moose, Morgan, Morton, New Prague, New Ulm, Ortonville, Osakis, Pembina, Pine City, Pine River, Pokegama Lake, Portage Lake, Red Wing, Redwood Falls, Rush City, St. Cloud, St. Paul, St. Peter, Sandstone, Sauk Center, Sleepy Eye, Stillwater, Stoddard, Superior, Sylvan, Urness, Verdon, Wabasha, Wahpeton, Walker, Warren, Wendell, Wheaton, White Bear, White Rock, Willow River, and Winona quadrangles.

AITKIN, ANOKA, BELTRAMI, BENTON, BIG STONE, CARLTON, CASS, CHIPPEWA, CHISAGO, CLAY, CLEARWATER, CROW WING, DAKOTA, DOUGLAS, GOODHUE, GRANT, HENNEPIN, HUBBARD, KITTSON, MARSHALL, MORRISON, NICOLLET, NORMAN, PINE, POLK, RAMSEY, RENVILLE ST. LOUIS, SCOTT, SHERBURNE, SIBLEY, STEVENS, SWIFT, TRAVERSE, WABASHA, WASHINGTON, WILKIN, AND WINONA COUNTIES.

The following descriptions and elevations are taken from reports of the Coast and Geodetic Survey and from manuscript furnished by the Chief of Engineers, United States Army, and are published by permission of the Superintendent of the Coast and Geodetic Survey and of the Chief of Engineers. The bench marks were established by the Coast and Geodetic Survey and by the Corps of Engineers, United States Army, from precise leveling and were included in the 1912 adjustment by the Coast and Geodetic Survey. The elevations are likely to be changed only slightly by any future adjustment.

DULUTH QUADRANGLE.

[Latitude, 46° 45'–47°; longitude, 92°–92° 15'.]

At Duluth.

| | |
|---|-------------------|
| Duluth, east corner of Lake Avenue and Superior Street, 12 feet 1 inch south of corner of Miller's Block on Lake Avenue side; upper surface of water table (U. S. C. E. b. m. 1)..... | Feet. 627. 168 |
| Duluth, at north end of Graves Slip, about 2 feet from a snubbing post and 234 feet north of first angle in wharf, established in 1887, on top surface of cap, in square of black paint; top of tack (U. S. C. E. b. m. 19) .. | 607. 725 |
| Duluth, at east end of southern bent of posts, near north line of Railroad Street, top surface of granite pedestal supporting an iron post of Sixth Avenue viaduct over railroad tracks; 2-inch square of black paint (U. S. C. E. b. m. 23)..... | 609. 618 |

SUPERIOR QUADRANGLE.[Latitude, $46^{\circ} 30' - 46^{\circ} 45'$; longitude, $92^{\circ} - 92^{\circ} 15'$.]**Near West Duluth.**

West Duluth, in office doorstep of Iron Bay Iron Works, 6 inches from north jamb and 2 inches from front of step; cross cut (Iron Bay Iron Works b. m.).....

Duluth Union Station, about 5 miles south of, 59 feet south from railroad bridge 48, 522 feet north from West End depot, 44 feet east from Northern Pacific Ry. track, in vitrified clay slab in ground, surmounted by iron pipe:

Top of copper bolt (U. S. C. E. p. b. m. 1).....

Top of cap on iron pipe (U. S. C. E. p. b. m. 1 A).....

Smithville, 1,476 feet north from station, 43 feet east of the railway track, 66 feet west of public road leading from Duluth to Fond du Lac, 156 feet northeast from railroad section house (iron post projecting 6 inches above ground, 148 feet south from bench mark, on which are letters St. P. & D. R. R., is said to be northeast corner of SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 27, T. 49, R. 15), in vitrified clay slab in ground, surmounted by iron pipe:

Top of copper bolt (U. S. C. E. p. b. m. 2).....

Top of cap on iron pipe (U. S. C. E. p. b. m. 2 A).....

CARLTON QUADRANGLE.[Latitude, $46^{\circ} 30' - 46^{\circ} 45'$; longitude, $92^{\circ} 15' - 92^{\circ} 30'$.]**From Short Line Park west along Northern Pacific Ry. to Carlton.**

Short Line Park, 6,562 feet west of station, 52 feet north of railroad track, at east end of high embankment on railway, in southwest corner of field, surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 3).....

Top of cap on iron pipe (U. S. C. E. p. b. m. 3 A).....

Thomson, 6,890 feet east of station, 49 feet south of railroad track, 298 feet west of cattle guard and 2.5 feet north of south right of way fence, surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 4)..... 1,

Top of cap on iron pipe (U. S. C. E. p. b. m. 4 A)..... 1,

Carlton, Carlton County courthouse, first window north of tower on west side of building, on top of sill; cross cut marked "U. S. + B. M." (U. S. C. E. p. b. m. 5)..... 1,

MAHTOWA QUADRANGLE.[Latitude, $46^{\circ} 30' - 46^{\circ} 45'$; longitude, $92^{\circ} 30' - 92^{\circ} 45'$.]**From Carlton southwest along Northern Pacific Ry. to Barnum.**

Carlton, about 6 miles south from, 371 feet east from northwest corner of sec.

1, T. 47, R. 17, 190 feet north from O'Donnell's house, 1 foot south from south fence of Superior and St. Paul military road, on land of Michael O'Donnell, surmounted by iron pipe, in vitrified clay slab:

Top of copper bolt (U. S. C. E. p. b. m. 6)..... 1,

Top of cap on iron pipe (U. S. C. E. p. b. m. 6 A)..... 1,

Blackhoof River, 500 feet west from bridge over, about 100 feet north from military road, 8.5 miles east from Barnum (two Norway pine trees blazed, stand respectively 79 feet north and 62 feet northeast from bench mark), surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 7)..... 1,

Top of cap on iron pipe (U. S. C. E. p. b. m. 7 A)..... 1,

Barnum, 3.9 miles east of, 193 feet north from junction of military road with public road to Barnum, 59 feet northwest from military road, surmounted by iron pipe, in vitrified clay slab in ground:

| | Feet. |
|--|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 8) | 1, 165. 736 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 8 A) | 1, 169. 705 |

Barnum, 1 mile east of, in southeast corner of sec. 36, 17 feet north from corner of Tps. 46 and 47, Rs. 18 and 19, being northwest corner of T. 46, R. 18, in Carlton County; township corner is marked by an iron bolt driven about 3 feet in ground in public road, surmounted by iron pipe, in vitrified clay slab in ground:

| | |
|--|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 9) | 1, 181. 812 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 9 A) | 1, 185. 824 |

WILLOW RIVER QUADRANGLE.

[Latitude, 46° 15'–46° 30'; longitude, 92° 45'–93°.]

From Moose Lake south along Northern Pacific Ry. to Rutledge.

Moose Lake, 525 feet east from a warehouse under which is northwest corner of sec. 21, T. 46, R. 19, 282 feet east from railroad station, 145 feet east from track, 20 feet 8 inches from southeast corner of L. L. Sargeant's dwelling, surmounted by iron pipe, in vitrified clay slab in ground:

| | |
|---|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 10) | 1, 059. 958 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 10 A) | 1, 063. 948 |

Sturgeon Lake, 321 feet south from south side of railroad station, 34 feet east of track, 209 feet southwest from Cunningham's barn, on a steep hillside which slopes southeast to bed of a former lake, surmounted by iron pipe, in vitrified clay slab in ground:

| | |
|---|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 11) | 1, 067. 855 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 11 A) | 1, 071. 868 |

Willow River village, on land of H. S. Akin, 3.3 feet west of southwest corner of sec. 2, T. 44, R. 20, 23 feet from each of two white-pine witness trees to section corner above named, 108 feet northeast from Akin's house, surmounted by iron pipe, in vitrified clay slab in ground:

| | |
|---|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 12) | 1, 027. 409 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 12 A) | 1, 031. 396 |

SANDSTONE QUADRANGLE.

[Latitude, 46°–46° 15'; longitude, 92° 45'–93°.]

From Kettle River station south along Northern Pacific Ry. to Hinckley.

Kettle River station, on land of Hugh Conway, 262 feet west of a point on railroad track, 390 feet south of railroad station, 32 feet west of fence and 147 feet west from northwest corner of schoolhouse, surmounted by iron pipe, in vitrified clay slab:

| | |
|---|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 13) | 1, 030. 556 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 13 A) | 1, 034. 512 |

Miller station, 1.060 feet south of railroad section house, 45 feet east of railroad track, 60 feet southeast from east end of a wooden culvert under track, surmounted by iron pipe, in vitrified clay slab in ground:

| | |
|---|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 14) | 1, 129. 742 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 14 A) | 1, 133. 718 |

Sandstone Junction, 150 feet northwest from northwest corner of railroad station, 121 feet west of track, surmounted by iron pipe, in vitrified clay slab in ground:

| | |
|---|-------------|
| Top of copper bolt (U. S. C. E. p. b. m. 15) | 1, 119. 197 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 15 A) | 1, 123. 196 |

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|--|----------------------|
| Hinckley, on top of granite bridge seat at northeast corner of trussed span of railroad over Grindstone River, 6 inches from south face and 6 inches from east face of stone and 10 inches from southeast corner of bed plate under inclined end post of bridge; cross cut marked "U. S. + B. M." (U. S. C. E. p. b. m. 16)..... | Feet. 1, 029. 427 |
| Hinckley, in northeast angle formed by crossing of Northern Pacific and Great Northern railroads, 123 feet northeast from center of crossing, 48 feet northwest from center of Great Northern Ry., 65 feet east from center of Northern Pacific Ry., surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 17) | 1, 030. 372 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 17 A)..... | 1, 034. 374 |

PINE CITY QUADRANGLE.

[Latitude, 45° 48'-46"; longitude, 92° 45'-23'.]

From Hinckley south along Northern Pacific Ry. to Rock Creek.

| | |
|---|----------|
| Mission Creek, 2,600 feet south of railroad station, 4.5 feet west of right-of-way fence, 46 feet east of track (there is an excavation in the railroad bed at this point about 3 feet deep), surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 18)..... | 986. 448 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 18 A)..... | 990. 455 |
| Browns Hill, 71 feet west from north head block of railroad siding, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 19)..... | 973. 489 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 19 A)..... | 977. 489 |
| Pine City, in top of east end of wall supporting track stringers at north end of trussed span of railroad over Snake River, 21 inches east of east track stringer and 26 inches west of west side of inclined end post at northeast corner of span; cross cut marked "U. S. + B. M."..... | 948. 738 |
| Pine City, in south side of Robinson Park, 4 feet north of park fence, 59 feet west of southeast corner of park, 141 feet east of southwest corner of park, 151 feet west of railroad track, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 21) | 946. 166 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 21 A)..... | 950. 172 |
| Rock Creek station, on land of E. Edgerton, 54 feet east of railroad track, 53 feet southeast from southeast corner of railroad bridge 18, and 243 feet south from railroad station, near edge of small bluff, 265 feet west from Edgerton's dwelling, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 22)..... | 934. 280 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 22 A)..... | 938. 282 |

RUSH CITY QUADRANGLE.

[Latitude, 45° 30'-45° 45'; longitude, 92° 45'-23'.]

From Rock Creek south along Northern Pacific Ry. to North Branch.

| | |
|---|----------|
| Rush City, in Presbyterian churchyard, 4 feet north of north wall of church and 65 feet from northwest corner of churchyard, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 23)..... | 915. 772 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 23 A)..... | 919. 762 |

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|---|-------------------|
| Rush City, north of water tank, in top of stone foundation of railroad, on northeast corner of north pier of third bent of framework from east side of track, about 4 inches from corner of stone; cross cut marked "U. S. + B. M." | Feet. 919. 296 |
| Harris village, on north end of small knoll, 53 feet east of railroad track, 55 feet west of east fence of public road, 849 feet south from railroad station, 206 feet east from S. J. Stark's dwelling house, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 25) | 897. 741 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 25 A) | 901. 718 |
| North Branch, on top of stone foundation of water tank, on northwest corner of second pier from north end of second bent of framework from railroad track; cross cut marked "U. S. + B. M." | 894. 309 |
| North Branch, 711 feet south of south line of Third Street, 45 feet east of track, about 3 feet from right-of-way fence, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 27) | 892. 731 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 27 A) | 896. 727 |

CENTER CITY QUADRANGLE.

[Latitude, 45° 15' - 45° 30'; longitude, 92° 45' - 93°.]

From North Branch south along Northern Pacific Ry. to Forest Lake.

| | |
|---|----------|
| Stacy village, on land of J. B. Dyarman, 179 feet west of railroad track, 164 feet northwest from station, 13 feet north of north side of Dyarman's dwelling, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 28) | 891. 104 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 28 A) | 895. 090 |
| Wyoming village, on R. M. Fullerton's land, 70 feet east of southeast corner of sec. 18, T. 33 N., R. 21 W., 139 feet east of railroad track, 2 feet north of north line of Fourth Street, 1,100 feet north of railroad station, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 29) | 887. 501 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 29 A) | 891. 495 |
| Forest Lake village, in top of foundation stone of railroad water tank, on north pier of second bent of framework from track; cross cut marked "U. S. + B. M." (U. S. C. E. p. b. m. 30) | 915. 090 |
| Forest Lake, on railroad reservation, 366 feet northwest from point on track on a line with north side of station, 225 feet west from track, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 31) | 909. 910 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 31 A) | 913. 925 |
| Forest Lake village, in northeast corner of lot 1, block 31, 102.5 feet west of railroad track, about 545 feet southwest from station, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 32) | 909. 746 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 32 A) | 913. 735 |

STILLWATER QUADRANGLE.

[Latitude, 45° - 45° 15'; longitude, 92° 45' - 93°.]

From Forest Lake south along Northern Pacific Ry. to White Bear.

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|---|----------|
| Centerville, on Mrs. Frances Kitchliis's land, 121 feet east of railroad track, 7 feet north of an oak tree, 25 feet south from northwest corner of Mrs. Kitchliis's lot and 187 feet north from her store and dwelling, surmounted by iron pipe, in vitrified clay slab in ground: | |
| Top of copper bolt (U. S. C. E. p. b. m. 33) | 931. 790 |
| Top of cap on iron pipe (U. S. C. E. p. b. m. 33 A) | 935. 786 |

Bald Eagle Junction, 410 feet north of station, 75 feet east of railroad track, 3 feet west of fence, 449 feet north from the crossing of Northern Pacific and Minneapolis, St. Paul & Sault Ste. Marie railroads, surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 34)
 Top of cap on iron pipe (U. S. C. E. p. b. m. 34 A)

WHITE BEAR QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 93°-93° 15'.]

From White Bear south along Northern Pacific Ry. to Gladstone.

White Bear, 42 feet from southwest corner of pump house, 160 feet from north end of White Bear station, on top of southeast corner of foundation stone at south end of east bent under north water tank of railroad; cross cut marked "U. S. + B. M." (U. S. C. E. p. b. m. 35)

White Bear village, on lot 12, block 53, 37 feet east of west line of Railroad Avenue, 8 feet south of south wall of White Bear Hotel, surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 36)
 Top of cap on iron pipe (U. S. C. E. p. b. m. 36 A)

White Bear, in east side of Railroad Park, 121 feet south of south line of Fourth Street, 207 feet from northeast corner of station, 85 feet from northwest corner of brick building occupied by Union Meat Market, surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 37)
 Top of cap on iron pipe (U. S. C. E. p. b. m. 37 A)

White Bear station, 1.2 miles south of, 2 feet west of right of way fence, 46 feet east of east track of railroad, 302 feet north from head block of Minneapolis branch of railroad, 315 feet north from switchman's house, surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 38)
 Top of cap on iron pipe (U. S. C. E. p. b. m. 38 A)

White Bear, on top of foundation stone of first bent east of railroad tracks at the second highway over bridge south of, 13 feet 3 inches north of south end of mudsill foundation, bridge is 1.5 miles north of the Gladstone depot; cross cut (U. S. C. E. t. b. m. 185)

Gladstone, 550 feet north of station, 153 feet west from southwest corner of Buford plow factory, 33 feet west of west track of railroad, in northwest angle formed by crossing of Northern Pacific and Wisconsin Central railroads, 71 feet from crossing, surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 39)
 Top of cap on iron pipe (U. S. C. E. p. b. m. 39 A)

Gladstone village, in northeast corner of lot 11, block 2, about 50 feet from northeast corner of Gladstone House, 193 feet west from St. Paul & Duluth Ry., surmounted by iron pipe, in vitrified clay slab in ground:

Top of copper bolt (U. S. C. E. p. b. m. 40)
 Top of cap on iron pipe (U. S. C. E. p. b. m. 40 A)

ST. PAUL QUADRANGLE.

[Latitude, 44° 45'-45°; longitude, 93°-93° 15'.]

From St. Paul to Minneapolis.

St. Paul, 0.25 mile east of Ridgewood station, on north end of east abutment of Chicago, Milwaukee & St. Paul Ry. bridge over Pleasant Avenue, in top stone, about 4 inches from northwest corner; square cut (U. S. C. E. t. b. m. 23)

| | |
|--|-------------------|
| St. Paul, 50 meters east of Ridgewood station on Chicago, Milwaukee & St. Paul Ry. Short Line between St. Paul and Minneapolis, on north end of east abutment of bridge over Victoria Street, 8 inches from northwest corner of stone, in top of stone; highest point in square cut, marked "U. □ S." (U. S. C. E. t. b. m. 22)..... | Feet. 827. 846 |
| St. Paul, on south side of Short Line, between St. Paul and Minneapolis, 250 meters east of Snelling Avenue, 16 rail lengths east of center of Macalester station, 11 meters south of center of south track, 3.5 meters east of 10 inch cottonwood tree; tile and pipe: Bolt in tile (p. b. m. Macalester) | 932. 577 |
| Top of cap..... | 936. 544 |
| St. Paul, on west abutment of Chicago, Milwaukee & St. Paul Ry. bridge over Prior Avenue, about 30 meters east of center of Marian Park station, about 10 inches from south and east edges of stone at southeast corner of south end of abutment, marked "U. □ S." (U. S. C. E. t. b. m. 18).... | 908. 561 |
| St. Paul, in west end of, about 70 meters east of Desnoyer Park station, on Pelham Street bridge over Chicago, Milwaukee & St. Paul Ry. tracks, on southwest corner of stone pedestal under west column on north side of tracks; square cut marked "U. □ S."..... | 869. 070 |
| Minneapolis, at northwest corner of University Avenue and Fifteenth Avenue SE., on north side of entrance to State University grounds, in northeast corner of top of large square granite stone; square cut (U. S. C. E. t. b. m. 13)..... | 840. 130 |
| Minneapolis, on north side of Pleasant Street, 1 meter north of granitoid walk, 34 meters west of intersection of Pleasant Street and street running along in front of University buildings, in Minnesota State University campus, 15 meters south of Mechanic Arts Building, stone post about 6 inches above ground, in center: copper bolt (U. S. C. E. p. b. m. University Campus)..... | 842. 432 |
| Minneapolis, at Minnesota State University, on north side of south entrance to Pillsbury Hall, 18 inches above ground and 2 meters from junction of tower and wall of main building, in north side of tower, bronze plate marked "U. S. C. and G. S.," in center of plate; horizontal line (p. b. m. Pillsbury Hall)..... | 847. 859 |
| Minneapolis, at southwest corner of University and Tenth avenues, 3 inches back of curb line on west side of University Avenue, on top of stone cover of catch basin; square cut marked "U. S. □" (U. S. C. E. t. b. m. 12)..... | 828. 102 |
| Minneapolis, on left bank of Mississippi River, about 150 meters below end of Great Northern Ry. bridge over Mississippi River below St. Anthony Falls, 0.5 meter west of west right of way fence of Great Northern Ry., 5 meters north of corner of fence; tile and pipe (U. S. C. E. p. b. m. 265 2), bolt in tile..... | 794. 001 |

At St. Paul.

| | |
|---|----------|
| St. Paul, on top of northern corner of pedestal block supporting southern post of fourth bent of iron piers west of the Northern Pacific Ry. track, where it passes under Third Street viaduct; cross cut (U. S. C. E. t. b. m. 193)..... | 711. 255 |
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From St. Paul southeast to Newport.

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|--|----------|
| St. Paul, on southeast corner of Washington and Eagle streets, on granite curbing, directly over center of inlet grating; highest part of square cut (U. S. C. E. t. b. m. 1)..... | 716. 209 |
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|---|-------------------|
| St. Paul, on southeast corner of Washington and Eagle streets, 9.2 feet from south side of Washington Street, 1.0 foot above old city storehouse which stands on east side of Eagle Street: | |
| Top of $\frac{3}{4}$ -inch copper bolt leaded vertically in center of regulation tile 18 inches square and 4 inches thick, set 2 feet 8 inches below surface of ground (U. S. C. E. p. b. m. 65)..... | Feet. 713. 978 |
| Top of cap on 4-inch iron pipe 4 feet long set directly over and concentric with p. b. m. 65, and standing 16 inches above ground (U. S. C. E. p. b. m. 66)..... | 717. 981 |
| St. Paul, on left bank of Mississippi River, on shore pier of Wabasha Street bridge, on northwest corner of upper pier, 6 inches from bridge seat stone; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 67)..... | 708. 138 |
| St. Paul, on left bank of Mississippi River, on lower wing wall of Chicago, St. Paul & Kansas City Ry. bridge, 4.76 feet above the lower end of bridge seat course and 2.75 feet back from its front edge; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 68)..... | 702. 748 |
| St. Paul, on left bank of Mississippi River, on lower bench of retaining wall of embankment of Chicago, St. Paul & Kansas City Ry. bridge; cut in top of stone, highest point of ring, marked "U. S. C. E." (old U. S. b. m. A)..... | 706. 737 |
| St. Paul, about 100 feet west of Jackson Street, on north side of railroad tracks opposite Diamond Joe freight depot, at east end of retaining wall and 4 inches back from its face: | |
| Top of copper bolt leaded in regulation tile (U. S. C. E. p. b. m. 70)..... | 704. 227 |
| Top of cap on iron pipe, about 14 inches above ground, over P. B. M. 70 (U. S. C. E. p. b. m. 71)..... | 708. 230 |
| St. Paul, city courthouse, Fifth and Wabasha streets, on west end of doorsill of south entrance to basement, 6 inches from either wall; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 72)..... | 779. 779 |
| St. Paul, on north abutment, east side, lowest step of wing wall of Chicago, St. Paul & Kansas City Ry. bridge, about 2 inches from its face, about 2 inches from second step, said to have been marked by a scratch; highest point in square cut in stone (old U. S. b. m. 24)..... | 694. 736 |
| St. Paul, in east end, on southeast side of wall, which is on southeast side of Schmidt & Constanx's brewery, about 120 feet north from railroad tracks and 30 feet from the sandrock bluff: | |
| Copper bolt in tile set 3 feet below ground (U. S. C. E. p. b. m. 73)..... | 699. 680 |
| Top of cap on iron pipe standing about 12 inches above ground, over P. B. M. 73 (U. S. C. E. p. b. m. 74)..... | 703. 683 |
| Dayton Bluff, 1.174 feet below depot, 1.890 feet below water tank, 1.5 feet west of west fence of Chicago, Milwaukee & St. Paul Ry., at south end of gate, at runway leading to railroad embankment: | |
| Top of copper bolt in tile (U. S. C. E. p. b. m. 75)..... | 697. 886 |
| Top of cap on iron pipe standing about a foot above the surface, over p. b. m. 75 (U. S. C. E. p. b. m. 76)..... | 701. 878 |
| Highwood, about 720 feet below station, midway between tracks, on a stone monument 7 inches square, in small square cut on top surface; highest point (U. S. C. E. t. b. m. 8)..... | 707. 535 |
| Highwood station, about 3,010 feet below, between Chicago, Burlington & Quincy R. R. and Chicago, Milwaukee & St. Paul Ry. tracks, on east end of stone culvert under the latter track, on coping stone; highest point in square (U. S. C. E. t. b. m. 9)..... | 697. 676 |

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|---|-------------------|
| Highwood station, about 1.5 miles below, opposite foot of Pig Eye Lake, several hundred feet below railroad cut, at west foot of embankment, by p. b. m. 77, on a very large, conspicuous granite bowlder; highest point in square (U. S. C. E. t. b. m. 10)..... | Feet. 711. 133 |
| Highwood, 1.5 miles below, opposite foot of Pig Eye Lake, at west fence of Chicago, Milwaukee & St. Paul Ry. right of way on its east side, about 60 feet below large granite bowlder carrying t. b. m. 10: Copper bolt in tile (U. S. C. E. p. b. m. 77)..... | 705. 888 |
| Top of cap on iron pipe standing 14 inches above ground, over p. b. m. 77 (U. S. C. E. p. b. m. 78)..... | 709. 884 |
| Red Rock, 1.350 feet above station, 140 feet south of a large bowlder lying at west foot of bank overgrown with vines, 9 feet east of west right of way fence, 35 feet northeast from a 1-foot blazed oak tree, on embedded bowlder; highest point in square cut (U. S. C. E. t. b. m. 11)..... | 725. 881 |

LAKE ELMO QUADRANGLE.

[Latitude, 44° 45'-45°; longitude, 92° 45'-93°.]

From Newport southeast to Hastings.

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|---|----------|
| Newport, on southeast corner of a lot belonging to and at the residence of H. A. Jones, station agent of Chicago, Milwaukee & St. Paul Ry., on top of heavy iron rod driven into the ground marking his corner; on northeast edge of rod (U. S. C. E. t. b. m. 12)..... | 743. 591 |
| Newport, on northeast corner of lot belonging to and at the residence of H. A. Jones, station agent of Chicago, Milwaukee & St. Paul Ry., set exactly on corner as per original gas pipe removed: Copper bolt in tile (U. S. C. E. p. b. m. 79)..... | 739. 749 |
| Top of cap on iron pipe standing about 4 inches above surface of ground, over p. b. m. 79 (U. S. C. E. p. b. m. 80)..... | 743. 749 |
| Newport landing, 80 feet above upper warehouse, in top of ledge two-thirds of way up river bank; top of large ringbolt with ring (old U. S. b. m. 12, also called old p. b. m. 3)..... | 692. 811 |
| St. Paul Park, at southwest corner of Broadway and Third Street, on Syndicate Block, on east end of doorstep; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 81)..... | 745. 297 |
| St. Paul Park and Pullman, on street between named Tenth Avenue, at its south line and 15 feet west of right of way of Chicago, Burlington & Quincy R. R.; top of iron gas pipe (U. S. C. E. t. b. m. 14)..... | 752. 387 |
| St. Paul Park and Pullman, between, on north side of Tenth Avenue, and 1.5 feet east of west right of way limit of Chicago, Burlington & Quincy R. R.: Top of copper bolt in tile (U. S. C. E. p. b. m. 83)..... | 750. 340 |
| Top of cap on iron pipe standing 1 foot above ground, over p. b. m. 83 (U. S. C. E. p. b. m. 84)..... | 754. 332 |
| Pullman station, 1½ miles below, 1,870 feet south of Tibbits Crossing, in upper part of long rock cut, on west side of Chicago, Burlington & Quincy R. R. track, about 2 feet above the ties, on a very hard and prominent point of ledge; highest point in square, marked "U. S. B. M." (U. S. C. E. t. b. m. 17)..... | 745. 471 |
| Nininger Slough, opposite head of, 1.5 feet north of south line of Chicago, Burlington & Quincy R. R. right of way fence, about 30 feet from a blazed oak tree standing in field, facing the p. b. m.: Top of copper bolt in tile (U. S. C. E. p. b. m. 85)..... | 693. 700 |
| Top of cap on iron pipe standing 14 inches above ground, over p. b. m. 85 (U. S. C. E. p. b. m. 86)..... | 697. 715 |

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|---|----------------------|
| Island 18, behind, 1,140 meters above upper culvert at foot of Nininger Slough, several feet north of Chicago, Burlington & Quincy R. R. track, 9 feet below a small wooden box culvert under track, on an embedded sandstone; highest point in square cut (U. S. C. E. t. b. m. 22).. | Feet. 692. 961 |
| Nininger Slough, directly opposite foot of, on west end of culvert under Chicago, Milwaukee & St. Paul Ry. track, on coping stone, 5.7 feet south of center of culvert; top of copper bolt leaded vertically (U. S. C. E. p. b. m. 87)..... | 691. 252 |
| Nininger Slough, about 700 feet below mouth of, between railroad tracks, at Franklin Coulee culvert, on upper end of coping stone; highest point in square (old U. S. b. m. 23, also called old p. b. m. 4)..... | 694. 166 |
| Hastings, on left bank, about 1.5 miles above, at prominent point of bluff, 0.7 mile above crossing of Chicago, Burlington & Quincy and Stillwater branch of Chicago, Milwaukee & St. Paul railroads, midway between tracks, on large sand rock; highest point in square cut, marked "U. S. B. M." The same letters, but very large, are cut in face of sand bluff just back of b. m. (U. S. C. E. t. b. m. 23)..... | 693. 726 |
| Hastings, opposite, on line of Chicago, Burlington & Quincy R. R., 108.5 feet east from center of track and 169.5 feet south from its crossing with Stillwater branch of Chicago, Milwaukee & St. Paul Ry., just west of wire fence and north of gate through it, leading to house of Thomas McDermott: Top of copper bolt in tile (U. S. C. E. p. b. m. 88)..... Top of cap on iron pipe standing 1 foot above ground, over p. b. m. 88 (U. S. C. E. p. b. m. 89)..... | 691. 435 695. 445 |
| Hastings, opposite, on line of Chicago, Milwaukee & St. Paul Ry., 935 feet up the track from draw pier of Hastings Bridge, at bridge 270, over slough, on east end of north abutment, at south part of curve of coping stone; highest point in square, marked "U. S." (U. S. C. E. p. b. m. 96). | 690. 878 |
| Hastings, on draw pier of Chicago, Milwaukee & St. Paul Ry. bridge, on upstream side, 6 inches south of gangway leading from draw pier to upper breakwater crib; top of masonry (U. S. C. E. p. b. m. 97)..... | 694. 549 |
| Point Douglas, 723 meters above upper end of Chicago, Burlington & Quincy R. R. trestle at, on east side of track, at base of rock cut, about 80 feet above center of E. H. Whittaker's house, 178 feet above upper end of railroad bridge, which is midway between houses of G. H. Campbell and E. H. Whittaker: Square cut on ledge (U. S. C. E. t. b. m. 26)..... In face of rock cut, center of copper bolt leaded horizontally directly over t. b. m. 26, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 90)..< | 708. 515 712. 043 |

RED WING QUADRANGLE.

[Latitude, 44° 30'-44° 45'; longitude, 92° 30'-92° 45'.]

Near Red Wing.

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| Red Wing, on southwest corner of Plum and Levee streets, in northeast corner of La Grange mill, in east face of foundation wall, 2.3 feet south from north face and 2.1 feet above sidewalk; center mark in copper bolt leaded horizontally, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 112)..... | 687. 807 |
| Red Wing, about 1,300 feet below Chicago, Milwaukee & St. Paul Ry. depot, at base and upper end of Barn Bluff, on river side of lower abutment of small railroad bridge, on first step below the top, 6 inches from first step; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 113)..... | 677. 355 |

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| Barn Bluff, 0.75 mile below small railroad bridge at upper end of, at foot of Barn Bluff, about 45 feet east from northeast corner of Pioneer Lime Works, on top stone of wall retaining the wagon road; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 57)..... | Feet. 687. 794 |
| Red Wing, 1.75 miles below, between two road crossings, about 328 feet above the slaughterhouse, 6.5 feet north from center of track, opposite a crossing signal board, 810 feet above p. b. m. 215, on an embedded rock; highest point in a square (U. S. C. E. t. b. m. 58)..... | 707. 633 |
| Red Wing, nearly 2 miles below, at a wagon-road crossing, 5 feet below its east fence and 20 feet north from center of track, 0.25 mile above slaughterhouse: Copper bolt in tile (U. S. C. E. p. b. m. 114)..... | 697. 046 |
| Top of cap on iron pipe, standing a foot above ground, over p. b. m. 114 (U. S. C. E. p. b. m. 115)..... | 701. 032 |

MAIDEN ROCK QUADRANGLE.

[Latitude, 44° 30'–44° 45'; longitude, 92° 15'–92° 30'.]

Near Wacouta.

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|--|----------|
| Red Wing, on right bank about 2½ miles below, opposite head of Island No. 26, in front of Minnesota Reform School building, on a large triangular sandstone, about 10 feet southwest of a blazed elm tree and 20 feet from shore at a medium stage; marked "U. \square S." (U. S. C. E. t. b. m. 59) ... | 672. 157 |
| Red Wing, on right bank about 3 miles below, 492 feet below the foot of Island No. 26, 39 feet from low-water shore at foot of bluffs, 2 feet above a very large and conspicuous white rock, on a large embedded boulder; highest point in square, marked "U. S. \square " (U. S. C. E. t. b. m. 60).... | 672. 250 |
| Red Wing, about 3½ miles below, ½ mile above the head of Island No. 28, just above a little tow-head and 180 feet above a large lone elm tree near shore at a medium low stage, on a very large piece of rock; highest point in square, marked "U. S. \square " (U. S. C. E. t. b. m. 61)..... | 671. 268 |
| Wacouta, 1.75 miles above, 1,722 feet above the head of South Channel, at east foot of round point of bluff on lower side of creek, above fishermen's shanties above old B. M. 32, 15 feet west from a 6-inch blazed ash tree marked "U.S.," 31 feet north from another blazed ash tree, and 20 feet east from a blazed oak tree: Copper bolt in tile (U. S. C. E. p. b. m. 116)..... | 676. 252 |
| Top of cap on iron pipe standing a foot above surface of ground, over p. b. m. 116 (U. S. C. E. 117) | 680. 242 |
| Wacouta, below Ida Creek, at point of steep sand bluff, close to south side of wire fence, 17.5 feet above large elm tree in which is located t. b. m. 62: Copper bolt in tile (U. S. C. E. p. b. m. 118)..... | 676. 131 |
| Top of cap on iron pipe standing about 1 foot above surface of ground, over p. b. m. 118 (U. S. C. E. p. b. m. 119) | 680. 130 |

LAKE CITY QUADRANGLE.

[Latitude, 44° 15'–44° 30'; longitude, 92° 15'–92° 30'.]

From Wacouta southeast to Lake City.

| | |
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| Lake Side, about 3.75 miles above, on Lake Pepin, on the wide, flat, wooded sand point, on the first point below the United States light, about in center of the point east and west, 230 feet from end of point at a medium low stage, 262 feet W. 10° N. from east shore and 193 feet southeast from northwest shore line, trees blazed: . Copper bolt in tile (U. S. C. E. p. b. m. 120)..... | 674. 382 |
| Top of cap on iron pipe standing about 1 foot above ground, over p. b. m. 120 (U. S. C. E. p. b. m. 121) | 678. 384 |

- Lake Side, 3.75 miles above, about 3,280 feet below the wide, flat, wooded sand point, on right bank of Lake Pepin, 295 feet below exceedingly large rock, under a 6-inch ash tree blazed, on embedded boulder about middle of beach: highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 66).....
- Lake Side, about 2.75 miles above, 1.5 miles below the wide, flat, sand point, at south end of long stretch of straight shore, on right bank of Lake Pepin, 25 feet below two exceedingly large rocks in middle of the way, 20 feet from a linn tree blazed, on embedded boulder; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 67).....
- Lake Side, 1.5 miles above, 3,600 feet above Point no Point, on right bank of Lake Pepin, in middle of the way, 28 feet from foot of bluff, 49 feet east from a blazed elm (top of tree broken off), on east end of embedded boulder; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 69).....
- Point no Point, Lake Pepin, being the last point in view from Lake Side looking up the lake, 60 feet below a very large round prominent boulder standing out in lake, 28 feet from foot of bluff, easily seen, on a large flat rock well embedded, with its upper face inclining about 25° with northeast horizon; square marked "U. □ S." (U. S. C. E. t. b. m. 70).....
- Lake Side, on Lake Pepin, at Lake Side hotel, 50 feet south from driven well on point, 7 feet east of path leading to well, 13 feet east from the oak tree bearing t. b. m. 72, in tile about 3 feet underground:
Copper bolt (U. S. C. E. p. b. m. 122).....
Top of cap on iron pipe standing about 1 foot above ground, over p. b. m. 122 (U. S. C. E. p. b. m. 123).....
- Florence, on Lake Pepin, at southeast corner of A. M. C. Johnson's doorway, at northwest corner of intersecting roads, about 197 feet back from river bank, on base stone of iron fence, 2.1 feet north from corner; highest point in square marked "U. □ S." (U. S. C. E. t. b. m. 76).....
- Florence, on Lake Pepin, on the northwest corner of the same roads as t. b. m. 76, 134 feet north from the corner which is the southeast corner of A. M. C. Johnson's yard, on west side of wagon road, 6 inches back of face line produced of iron fence:
Copper bolt in tile about 3 feet below surface (U. S. C. E. p. b. m. 124).....
Top of cap on iron pipe standing about a foot above ground, set over p. b. m. 124 (U. S. C. E. p. b. m. 125).....
- Florence, 3,363 feet below, on Lake Pepin, on the beach, 60 feet from foot of high bank, on a large, prominent, black granite boulder, easy to find; highest point in square, marked "U. S." (U. S. C. E. t. b. m. 77).....
- Central Point, in village on Lake Pepin, on east boundary line of Front Street, 66 feet from fence on west side of Front Street, 152 feet north from northwest corner of Main and Front streets, 92 feet from southeast corner of sawmill office, 240 feet southeast from property corner of George H. Grannis and F. A. Coon, 95 feet from southwest corner of sawmill:
Copper bolt in tile (U. S. C. E. p. b. m. 126).....
Top of cap on iron pipe standing about 8 inches above surface of ground, set over p. b. m. 126 (U. S. C. E. p. b. m. 127).....

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| Lake City, on Lake Pepin, on west side of Front Street, between Lyon Avenue and Center Street, on T. W. Palmer's shoe store, in north end of window seat; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 128). | Feet. 689. 615 |
| Lake City, on Lake Pepin, on southeast corner of Front and Center streets, on Merchants' Bank building, in east end of stone doorstep; copper bolt leaded vertically marked "U. S. P. B. M." (U. S. C. E. p. b. m. 129). | 689. 707 |
| Lake City, on Diamond Jo Elevator, 10.5 feet west of southeast corner, on foundation stone, at west end of stone pier; southeast quarter of old cross (old U. S. b. m.). | 675. 097 |

WABASHA QUADRANGLE.

[Latitude, 44° 15'–44° 30'; longitude, 92°–92° 30'.]

From Lake City southeast along Mississippi River to Wabasha.

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|--|----------|
| Lake City, 2 miles below, on Lake Pepin, 0.5 mile above first high bluff, 105 feet below bridge 156, on Chicago, Milwaukee & St. Paul Ry. right of way, at east fence, 115 feet from top of lake bank, at upper end of cut: Copper bolt in tile (U. S. C. E. p. b. m. 130). | 692. 036 |
| Top of cap on iron pipe standing about a foot above ground, set over p. b. m. 130, (U. S. C. E. p. b. m. 131). | 696. 042 |
| Lake City, 3 miles below Center Street, on Lake Pepin, 9 feet toward bluff from center of Chicago, Milwaukee & St. Paul Ry., 3,000 feet below bridge 154, opposite blazed telegraph pole, on rock embedded in side of bank and projecting 1 foot above surface; highest point in square (U. S. C. E. t. b. m. 84). | 684. 316 |
| Keplers Coulee, on Lake Pepin, 1.5 miles above Kings Coulee station, at upper side of point of land north of railroad, covered with very large rocks, at upper end of very large bowlder supporting railroad embankment, 15 feet from center of track, 25 feet from lake; highest point in square, marked "U. S. T. B. M." (U. S. C. E. t. b. m. 86). | 679. 878 |
| Keplers Coulee, on Lake Pepin, 1.5 miles above Kings Coulee station, on north sloping face of the exceedingly large bowlder on which t. b. m. 86 is cut; top of a copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 132). | 680. 763 |
| Kings Coulee, on Lake Pepin, on Chicago, Milwaukee & St. Paul Ry. bridge 146, on north end of west abutment, on front edge of second top stone from north end; highest point in square, marked "U. S." (U. S. C. E. t. b. m. 87). | 680. 471 |
| On Lake Pepin, 150 feet below section house, 49 feet south from center of track, 82 feet below center of bridge 146, on right of way at south fence, 7 feet east of east gatepost of gate across road leading through to Smith's land: Copper bolt in tile (U. S. C. E. p. b. m. 133). | 682. 807 |
| Top of cap on iron pipe standing a foot above ground, set over p. b. m. 133 (U. S. C. E. p. b. m. 134). | 686. 819 |
| Dutchmans Coulee, on Lake Pepin, 1 mile below Kings Coulee station, 853 feet below bridge 142, at upper end of small cut, 15 feet toward lake from center of track, on large, round, embedded bowlder supporting embankment; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 88). | 679. 143 |
| Kings Coulee, 1½ miles below, on Lake Pepin, 275 feet above bridge 140, on lake side of track, at lower end of cut, 200 feet above Copelands Coulee bridge, just above Theodore Halm's house, on embedded bowlder; highest point in square marked "U. □ S." (U. S. C. E. t. b. m. 89). | 683. 837 |

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| Reeds landing, 1.5 miles above, on Lake Pepin, at Eli Roscoe's Coulee, on south side of track, on base stone of east retaining wall in bed of creek; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 90).... | Feet. 681. 331 |
| Reeds landing, 1.5 miles above, on Lake Pepin, at Eli Roscoe's Coulee, in point of hill between wagon road and railroad opposite John Sandburn's house, 31 feet south from center of track, 16 feet east from east bank of creek where t. b. m. 90 is located, 20 feet north from north side of road bridge: | |
| Copper bolt in tile 3 feet under ground. (U. S. C. E. p. b. m. 135)..... | 685. 130 |
| Top of cap on iron pipe standing 1 foot above ground, set over p. b. m. 135 (U. S. C. E. p. b. m. 136)..... | 689. 129 |
| Roscoe's Coulee, 0.75 mile below, at foot of Lake Pepin, on prominent point of south shore, at north side of north railroad ditch, 810 feet above bridge 134, 9 feet from center of track, on large embedded rock; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 91)..... | 683. 996 |
| Reeds landing, 246 feet below Knapp, Stout & Co's. warehouse, on south side of Water Street, in north door of S. Trautmann's store, in south end of stone doorstep; copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 137)..... | 686. 032 |
| Reeds landing, 0.6 mile below Chicago, Milwaukee & St. Paul Ry. station, 45 feet below intersection of said railroad with tangent produced of Chicago, Milwaukee & St. Paul Ry. pontoon bridge over Mississippi River, 10 feet north from center of track, on an embedded rock; highest point in square (U. S. C. E. t. b. m. 93)..... | 683. 421 |
| Reeds landing, just above pontoon bridge across the Mississippi, at northwest corner of Arthur Dunn's residence which is on south side of street facing the river; bottom of corner strip. (old U. S. b. m. A.)..... | 690. 061 |
| Reeds landing, 58 feet east from intersection of south fence of Water Street with tangent produced of pontoon bridge, in northeast corner of Arthur Dunn's lot, 8 feet south from front fence and 1.6 feet west of east fence: | |
| Copper bolt in tile 3 feet under ground (U. S. C. E. p. b. m. 138)..... | 685. 179 |
| Top of cap on iron pipe over p. b. m. 138 (U. S. C. E. p. b. m. 139)... | 689. 165 |
| Wabasha, northwest corner of Pembroke and Main streets, on The People's Bank building, near north post of door of corner entrance, directly under brick line on south side of the south window, in water table; copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 140). | 690. 550 |
| Wabasha, at elevator, between tracks on north face of retaining wall, 3 feet above corner of wall, on west side of runway under track to elevator; on front part of top surface of corner of stone (U. S. b. m. 62½)..... | 677. 394 |
| Wabasha, southeast corner of Main and Bailey streets, on north front of old Commercial Hotel, on upstream end of stone doorsill between two doors, 3.5 inches out from brick wall (old U. S. b. m. E.)..... | 690. 428 |
| Wabasha, in lower part of, in Campbell's Addition, in northwest corner of Mrs. E. J. Dugan's lot, just above t. b. m. 96, 1.2 feet from west fence and 1.6 feet south from street fence: | |
| Copper bolt in tile 3 feet under ground (U. S. C. E. p. b. m. 141)..... | 678. 372 |
| Top of cap on iron pipe over p. b. m. 141 (U. S. C. E. p. b. m. 142).... | 682. 341 |
| Teepeeota Point, in northeast corner of David Pugh's yard, 1.5 feet from east fence and 22 feet south from corner of fence, 102 feet from northeast corner of house, 89 feet from river: | |
| Copper bolt in tile (U. S. C. E. p. b. m. 143)..... | 673. 014 |
| Top of cap on iron pipe over p. b. m. 143 (U. S. C. E. p. b. m. 144).. | 676. 997 |

Alma, 1.25 miles above, on right bank, at lower line of dike closing chute behind Island No. 36, about 20 feet east of t. b. m. 102, 60 feet back from river bank, midway between elm tree and elm stub, both blazed toward the p. b. m.:

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| Top of copper bolt set 3 feet below surface of ground, in tile (U. S. C. E. p. b. m. 145)..... | Feet. 663.824 |
| Top of cap on iron pipe over p. b. m. 145 (U. S. C. E. p. b. m. 146) .. | 667.817 |

WINONA QUADRANGLE.

[Latitude, 44°-44° 15'; longitude, 91° 30'-91° 45'.]

From Winona southeast to Homer.

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| Winona, on left bank of river, in abutment of Chicago & North Western Ry. bridge, at upper side of downstream bedplate of northeast post, on line with five rivets; highest point in square (old U. S. b. m. XVII)..... | 658.821 |
| Winona, on north end of Chicago & North Western Ry. bridge, on west end of first pier south of abutment, 4 feet from north face and 2 feet from end of pier; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 166) | 658.020 |
| Winona, on north wing wall of land abutment of Chicago & North Western Ry. bridge, on seventh stone step from top, 5 inches back from its north face and 7 inches from west face of sixth step; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 167)..... | 661.800 |
| Winona, new gage at, on Chicago & North Western Ry. bridge, on pier at south end of drawbridge, at lower part of its river face, dressed in the masonry to feet and tenths..... | 640.123 |
| Winona, on down-river side of Winona waterworks engine house, on river end of stone sill of door toward river; highest point in circle (old U. S. b. m. b)..... | 659.224 |
| Winona, at entrance to waterworks standpipe, on west end of bottom step; marked by a light cross (Winona city b. m.) | 658.158 |
| Winona, on east face of water tower, on bottom surface of a deep notch cut in base stone about 2 feet above ground, on river side of old line; highest point in square (old U. S. b. m.)..... | 658.912 |
| Winona, in courthouse, on north front of west window sill, about 1 foot above ground; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 168)..... | 666.344 |
| Winona, of gage record, on southwest corner of East Front and Franklin streets, opposite L. C. Porter's mill, at front door of brick office, on downstream end of step; highest point in square (old U. S. b. m. B)..... | 657.715 |
| Winona, on the southwest corner of East Second and Liberty streets, on upstream end of west window sill, 19.7 feet west from east corner of building; high point in rear part of square (old U. S. b. m. on Liberty and Second streets)..... | 661.095 |
| Winona, 492 feet above bridge of Winona & Southwestern and Chicago, Burlington & Quincy railroads across the Mississippi, on north side of approach, just in rear of Mr. Keys's house, on brick barn, on upstream end of stone sill of window facing river; high point in rear part of old square (old U. S. b. m. on Keys's barn)..... | 667.732 |
| Winona, lower, on bridge of Winona & Southwestern and Chicago, Burlington & Quincy railroads, on upstream end of first pier from abutment, on southwest corner of coping stone; top of copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 169)..... | 663.886 |

Minneapolis, below Winona, on southwest side of Chicago, Milwaukee & St. Paul Ry. track, 92 feet below lower end of bridge over Pine Creek which is the first creek below Winona, in E. A. Goodfellow's front yard, about 45 feet below t. b. m. 129, 1.5 feet southwest from front fence:

Copper bolt in tile 3 feet under ground (U. S. C. E. p. b. m. 170)..... 650

Top of cap on iron pipe over p. b. m. 170 (U. S. C. E. p. b. m. 171).... 654

Lower Winona, 2.6 miles below Winona & Southwestern Ry. bridge across the Mississippi, 3,182 feet above Homer and 1,804 feet below milepost 117 of Chicago, Milwaukee & St. Paul Ry. track, 10 feet northeast from center, at mouth of wooden box drain, on large rock; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 130)..... 655

Homer, 2,920 feet below station, 1,686 feet below bridge 42, 10 feet southwest from center of track, 367 feet below p. b. m. 172 and 173, on rock; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 131).... 660

Homer, 2,352 feet below station, on bluff side of Chicago, Milwaukee & St. Paul Ry. track, 1 foot east from fence, in front of William Beener's brick house, on hill, opposite lone hickory tree standing on bluff side of wagon road:

Copper bolt in tile 3 feet below surface of ground (U. S. C. E. p. b. m. 172)..... 658

Top of cap on iron pipe over p. b. m. 172 (U. S. C. E. p. b. m. 173).... 662

LA CRESCENT QUADRANGLE.

[Latitude, 43° 45'-44"; longitude, 91° 15'-91° 30'.]

From Homer southeast to point near La Crosse.

Island No. 75, opposite foot of, on line of Chicago, Milwaukee & St. Paul Ry. track, 2,371 feet above milepost 120, 15 feet north from center of track, on embedded rock; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 132)..... 658.

Island No. 76, opposite closing dike of, 594 feet below bridge 36, on line of Chicago, Milwaukee & St. Paul Ry. track, 15 feet north from center, on embedded rock; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 133)..... 660.

Homer, 2.75 miles below, opposite end of closing dike behind Island No. 76, 656 feet below bridge 36, on Chicago, Milwaukee & St. Paul Ry. right of way, at fence on bluff side, 984 feet below milepost 120, 75 feet more or less below t. b. m. 133, about 15 feet above grade of track:

Copper bolt in tile 3 feet under ground (U. S. C. E. p. b. m. 174)..... 668

Top of cap on iron pipe over p. b. m. 174 (U. S. C. E. p. b. m. 175).... 672

Lamoille, 4,593 feet above, opposite foot of Island No. 77, 1,952 feet below center of bridge 32 of Chicago, Milwaukee & St. Paul Ry. track, 1,666 feet above milepost 122 from St. Paul, at upper end of cut, 8 feet northeast from center of track, on embedded boulder; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 135)..... 654

Lamoille, 154 feet above Chicago, Milwaukee & St. Paul Ry. station, at foot of bluff, 50 feet southwest from center of track, 35 feet above upper end of bridge, 69 feet below frame house:

Top of copper bolt in tile (U. S. C. E. p. b. m. 176)..... 65-

Top of cap on iron pipe over p. b. m. 176 (U. S. C. E. p. b. m. 177).... 651

Richmond, about 1 mile above, at E. Leach's crossing, just above upper roadside fence, 15 feet east of center of track, on embedded boulder; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 142).... 671

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| ond, 1,900 feet below bridge 16, 615 feet above the upper end of | |
| ag, 101 feet above upper end of Jacob Danenhower's house, 105 feet | |
| w lower end of barn, 47 feet west of center of Chicago, Milwaukee | |
| t. Paul Ry. track: | |
| op of copper bolt in tile set 3 feet below surface of ground (U. S. C. E. | Feet. |
| p. b. m. 178)..... | 655. 560 |
| op of cap on iron pipe over p. b. m. 178 (U. S. C. E. p. b. m. 179). | 659. 559 |
| ond, in front of Queens Bluff, 639 feet above milepost 127, about | |
| enter of siding, 12 feet east of track center, on ledge of rock in small | |
| ; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 144)... | 655. 799 |
| a, 2.25 miles above, just above Island No. 90, 656 feet above Henry | |
| sters's house, on line of Chicago, Milwaukee & St. Paul Ry., 12 feet | |
| t of center of track; highest point in square, marked "U. □ S." (U. S. | |
| 3. t. b. m. 146) | 671. 229 |
| ond, 1.5 miles below, 787 feet below line of dike above head of Island | |
| . 90, 285 feet above house of Henry Winters, directly opposite farm | |
| ing, 39 feet from center of track toward river, 39 feet back from top | |
| river bank: | |
| Copper bolt in tile 3 feet underground (U. S. C. E. p. b. m. 180)..... | 662. 955 |
| Top of cap on iron pipe set over p. b. m. 180 (U. S. C. E. p. b. m. 181)... | 666. 964 |
| a, 656 feet above Chicago, Milwaukee & St. Paul Ry. station, 430 | |
| t below milepost 131, on west side of wagon road, 262 feet west from | |
| ter of track, on line with stone fence in front of Amos Shay's resi- | |
| nce and 13 feet above its upper end, 69 feet from a lone blazed cotton- | |
| od tree standing on east side of wagon road: | |
| Copper bolt in tile 3 feet underground engraved "U. S. P. B. M." (U. S. | |
| C. E. p. b. m. 182)..... | 662. 803 |
| p of cap on iron pipe set over p. b. m. 182 (U. S. C. E. p. b. m. 183)... | 666. 803 |
| a, 269 feet below Chicago, Milwaukee & St. Paul Ry. station, 9.5 | |
| t west from center of track, on water-tank foundation, at lower side, | |
| at pier, on southeast corner of base stone; highest point in circle (old | |
| S. b. m. 131)..... | 652. 764 |
| back, in upper end of, on east end of stone culvert, under high fill, | |
| 3 feet from river, on southeast corner of coping stone, on sandstone; | |
| highest point in circle (old U. S. b. m. 130½, also called old p. b. m. 18)... | 648. 246 |
| back, northwest corner of Second and G streets, on front of R. Remp's | |
| ick store, in the south end of stone doorstep; top of copper bolt leaded | |
| metrically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 184) | 689. 641 |
| back, about 3,609 feet below, about 2,792 feet below milepost 133 on line | |
| Chicago, Milwaukee & St. Paul Ry., 12 feet east from center of track, | |
| embedded boulder; highest point in square, marked "U. □ S." | |
| . S. C. E. t. b. m. 151)..... | 659. 874 |
| back, about 3,609 feet below, on opposite side of track from t. b. m. 151, | |
| 5 feet below Henry Becker's house, and 280 feet above his limekiln, | |
| 7 feet below head block at upper end of siding, at west fence, 48.7 feet | |
| et from center of track: | |
| Copper bolt in tile 3 feet underground (U. S. C. E. p. b. m. 185)..... | 656. 307 |
| Top of cap on iron pipe set over p. b. m. 185 (U. S. C. E. p. b. m. 186)... | 660. 317 |
| back Slough, at mouth of, 1,079 feet above milepost 135, on bank of | |
| Chicago, Milwaukee & St. Paul Ry., 12 feet west from center of track, on | |
| ck marked "U. □ S."; highest point in square (U. S. C. E. t. b. m. 153)... | 663. 326 |

River Junction, 1.75 miles above, on line of Chicago, Milwaukee & St. Paul Ry., about 100 feet above Ferndale Cottage, 65 feet below the very large and conspicuous boulder on west side of west ditch, 196 feet above milepost 136, on embedded boulder; highest point in square, marked "U. \square S." (U. S. C. E. t. b. m. 154).....

La Crescent, above, about 1,320 feet above station at River Junction, 915 feet above head block at lower end of siding, 400 feet below J. A. Selzer's stone house, 95 feet above Mr. Edwards's house, on bluff side of Chicago, Milwaukee & St. Paul Ry. track, 66 feet from center, 48 feet from side track:

Copper bolt in tile 3 feet underground (U. S. C. E. p. b. m. 187).....

Top of cap on iron pipe set over p. b. m. 187 (U. S. C. E. p. b. m. 188)..

La Crescent, above, 590 feet above River Junction station, 50 feet west from center of Chicago, Milwaukee & St. Paul Ry. track, on a land monument which is a square stone set in ground and standing 2 feet above surface, marked on top with a diagonal line and a figure 3; highest point in upper part of figure 3 (U. S. C. E. t. b. m. 155).....

La Crosse, Wis., above, on right bank of the Mississippi, on west pier of Chicago, Milwaukee & St. Paul Ry. bridge, on upstream point or nose of capstone, in south part of old circle; highest point in small square (U. S. C. E. old U. S. b. m. 139, also called old p. b. m. 19).....

La Crosse, Wis., on west pier of Chicago, Milwaukee & St. Paul Ry. bridge above, on same pier as old b. m. 139, lower side of track, on downstream end of capstone; copper bolt leaded vertically, marked "U. S. P. B. M." (U. S. C. E. p. b. m. 189).....

MINNEAPOLIS QUADRANGLE.

[Latitude, 44° 45'-45°; longitude, 93° 15'-93° 30'.]

At Savage.

Savage, at entrance to City Hall, in northeast corner of doorsill; chiseled cross (U. S. C. E. b. m.)

ANOKA QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 93° 15'-93° 30'.]

From Minneapolis northwest to Itasca station.

Minneapolis, bridge on University Avenue over Great Northern Ry. tracks on Second Avenue, on south abutment, in top of west end, in center of abutment, 6 inches from west end; square cut marked "U. S. P. B. M." (U. S. C. E. p. b. m. Great Northern).....

Minneapolis, on east side of Marshall Street, between Twelfth and Thirteenth avenues, office of Minneapolis Brewing Co., in north end of lowest step of main entrance, step is 1 inch above sidewalk; square cut marked "U. S. P. B. M." (U. S. C. E. p. b. m. Brewery).....

Minneapolis, at end of Seventeenth Avenue, Northern Pacific Ry. bridge over Mississippi River, on top of north end of east abutment, 8 inches from north edge and 5 inches from west edge of top stone, 2.3 meters above bridge seat; square cut (U. S. C. E. t. b. m. 11).....

Minneapolis, on west side of Marshall Street, between Twentieth and Twenty-first avenues, 17 meters from iron gate on Marshall Street, at southeast corner of main building of Gluck's brewery, 4.3 feet above ground, leaded vertically into top of water table; copper bolt marked "U. S. P. B. M." (U. S. C. E. p. b. m. Gluck).....

| | |
|---|----------|
| Minneapolis, on left bank of Mississippi River, 0.25 meter north of fence on north line of Twenty-seventh Avenue, 5 meters east of fence corner and 72 meters west of west line of Marshall Street; tile and pipe (U. S. C. E. p. b. m. 266-2): | |
| Copper bolt in tile..... | 829. 962 |
| Minneapolis, on northeast corner of Marshall Street and Forty-second Avenue, property of Minneapolis Brewing Co., at main entrance to Louis Opchal's hotel and saloon, in southwest corner of stone doorstep; square cut marked "U. □ S." (U. S. C. E. t. b. m. 3)..... | 832. 968 |
| Minneapolis, 0.75 mile above upper limits of, 0.25 mile above center line of sec. 27, on left bank of Mississippi River, about 75 meters back from river bank, 500 meters above angle in road, 200 meters below another angle in road, at junction of fences, 0.5 meter west of fence on west side of wagon road, 0.5 meter south of fence running west from road, tile and pipe (U. S. C. E. p. b. m. 267-2): | |
| Copper bolt in tile..... | 831. 412 |
| Fridley, about 0.5 mile above post office, 3.25 miles above city limits of Minneapolis, 100 meters back from left bank of river, on property of McMullen, 0.5 mile above Rice Creek, 0.5 meter south of an east-west fence along south side of cultivated strip, at corner of timber. Blazed trees: 10-inch oak, 349° distant 2.6 meters; 6-inch oak, 267° distant 4.6 meters; tile and pipe (U. S. C. E. p. b. m. 268-2): | |
| Copper bolt in tile..... | 847. 016 |
| Anoka, 6.5 miles below, 4.5 miles above Fridley mill, on left bank of Mississippi River, on public road between Minneapolis and Anoka, on brick schoolhouse, at front entrance, near triangulation Dunn, on north end of lower step; square cut (U. S. C. E. t. b. m. 27)..... | 887. 410 |
| Minneapolis, about 9 miles above upper limits of, 250 meters west of river road on left bank of river, SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 26, T. 31, R. 24, on property of John Dunn, 120 meters above Dunn's (brick) schoolhouse, in timber opposite first angle in road. Blazed trees: 12-inch oak, 298° distant 7.4 meters; 10-inch oak, 353° distant 3.4 meters; 12-inch oak, 67° distant 3.8 meters; 8-inch oak, 143° distant 3.4 meters; tile and pipe (U. S. C. E. p. b. m. triangulation Dunn): | |
| Bolt in tile..... | 876. 934 |
| Top of cap..... | 880. 917 |
| Anoka, 5 miles below, on Northern Pacific Ry. bridge over Coon Creek, on top of west end of north abutment of bridge, in granite stone; square cut (U. S. C. E. t. b. m. 29)..... | 855. 214 |
| Dunn Island, 200 meters above, 0.75 mile above mouth of Coon Creek, at edge of timber, 100 meters back from river bank, on slope near foot of bench, 40 meters north of east-west wagon road, on property of John Dunn. Blazed trees: 20-inch oak, 79° distant 4.2 meters; 15-inch oak, 152° distant 7.0 meters; 15-inch oak, 199° distant 7.9 meters; tile and pipe (U. S. C. E. p. b. m. 269-2): | |
| Bolt in tile..... | 835. 034 |
| Top of cap..... | 838. 988 |
| Anoka, 3.5 miles below, on left bank of river, on line between secs. 16 and 21, T. 31 N., R. 24 W., on line between property of George Smith and Lewis Greenwald, 2 meters north of south road fence, directly south of residence of S. J. Powell, 0.5 mile below district school No. 2, on south side of river road. Blazed trees: 10-inch scrub oak, 101° distant 12.5 | |

- Elk River, 3 miles below, 500 meters below lower end of Island No. 200, about 300 meters back from left bank of river, at edge of timber and cultivation, 1 meter toward river from wire fence on property of A. L. Stimson, sec. 14, T. 32 N., R. 24 W., about 215 meters below Stimson's house; tile and pipe. Blazed trees: 10-inch oak, 323° distant 9 meters; 4-inch oak, 61° distant 8.6 meters; 4-inch oak, 109° distant 6 meters (U. S. C. E. p. b. m. 274-2);
- Bolt in tile.....
- Top of cap.....
- Elk River, 3 miles below, on public road 300 meters back from left bank of river, opposite foot of Sturgeon Island in corner of fence, 1 meter west of fence on west side of road on property of A. J. Smith and 14 meters south of a point opposite south end of Smith's house; blazed 18-inch elm tree 100° distant 8 meters; tile and pipe U. S. C. E. p. b. m. 272-2;
- Bolt in tile.....
- Top of cap.....
- Elk River, about 3 miles below, on right of way of Great Northern Ry., about 500 meters below schoolhouse, 200 meters above foot of Goodwins Island, 150 meters above lower end of railway curve, 75 meters above a milepost marked S. 107-St. Paul 33, 0.5 meter south of north right of way fence; tile and pipe U. S. C. E. p. b. m. 273-2;
- Bolt in tile.....
- Top of cap.....

ELK RIVER QUADRANGLE.

[Latitude, 45° 15'-45° 30'; longitude, 93° 37'-93° 49'.]

From Itasca northwest along Mississippi River to Monticello.

- Elk River, 3 miles below, 500 meters below lower end of Island No. 200, about 300 meters back from left bank of river, at edge of timber and cultivation, 1 meter toward river from wire fence on property of A. L. Stimson, sec. 14, T. 32 N., R. 26 W., about 215 meters below Stimson's house; tile and pipe. Blazed trees: 10-inch oak, 323° distant 9 meters; 4-inch oak, 61° distant 8.6 meters; 4-inch oak, 109° distant 6 meters (U. S. C. E. p. b. m. 274-2);
- Bolt in tile.....
- Top of cap.....
- Elk River, at lower end of town, 150 meters below ferry landing, on left bank of river, 0.5 meter toward river from west right of way fence of Great Northern and Northern Pacific railroads, 0.5 meter west from junction of fences, nearly in line with center of north-south street; tile and pipe (U. S. C. E. p. b. m. 275-2);
- Bolt in tile.....
- Top of cap.....

| | |
|---|-------------------|
| Elk River, on top of downstream cylinder of middle pier of wagon bridge over, just above milldam, 1 foot from downstream edge of cylinder, on top of iron cap; square cut marked "U. \square S." (U. S. C. E. p. b. m. Elk River)..... | Feet. 873. 240 |
| Otsego, opposite, in north-south public road, 0.5 meter west of wire fence along east line of road, about 150 meters back from left bank of river, 57 meters north of bend in road to ferry; tile and pipe. Blazed trees: 5-inch oak, 85° distant 16.2 meters; 15-inch oak, 27° 50' distant 27.2 meters; 5-inch oak, 1° distant 15.4 meters (U. S. C. E. p. b. m. 276-2): | |
| Bolt in tile..... | 897. 514 |
| Top of cap..... | 901. 468 |
| Monticello, 6 miles below, 100 meters above head of Demicks Island, 75 meters from river bank, 1 meter east of wire fence along an old wagon road running nearly north. Blazed trees: 18-inch oak, 62° distant 10.2 meters; 18-inch oak, 269° distant 2 meters, on left bank of river; tile and pipe (U. S. C. E. p. b. m. 277-2): | |
| Bolt in tile..... | 891. 166 |
| Top of cap..... | 895. 116 |
| Monticello, 3 miles below, about 300 meters east of J. C. Johnson's house, 100 meters west of junction of fences in sec. 32, T. 33 N., R. 27 W., about 600 meters back from left bank of river, 0.5 meter south of fence on north line of road, in public road; tile and pipe (U. S. C. E. p. b. m. 278-2): | |
| Bolt in tile..... | 925. 848 |
| Top of cap..... | 929. 755 |

BECKER QUADRANGLE.

[Latitude, 45° 15'-45° 30'; longitude, 93° 45'-94°.]

From Monticello northwest along Mississippi River to Bear Island.

| | |
|---|----------|
| Monticello, about 1 mile below a point opposite lower limits of, 1 meter south of fence on north line of road, in east-west public road, on north side of river; adjoining property belongs to Mr. McAllester; tile and pipe (U. S. C. E. p. b. m. triangulation East Base, Monticello base line): | |
| Bolt in tile..... | 931. 097 |
| Top of cap..... | 935. 080 |
| Monticello, opposite lower end of, in east-west public road, on north side of river, about 200 meters below turn in road at river bank, 1 meters south of fence on north side of road; adjoining property belongs to Mr. Taft; tile and pipe (U. S. C. E. p. b. m. triangulation West Base, Monticello base line): | |
| Bolt in tile..... | 930. 717 |
| Top of cap..... | 934. 677 |
| Monticello, opposite upper end of picnic grounds at lower end of, 0.5 meter north of fence on south side of road, about 100 meters west of W. M. Taft's house, about 100 meters back from left bank of river, 25 meters west of angle in fence, in east-west public road; tile and pipe (U. S. C. E. p. b. m. 279-2): | |
| Bolt in tile..... | 933. 197 |
| Top of cap..... | 937. 151 |
| Monticello, on wagon bridge over Mississippi River, downstream cylinder of shore pier on left bank, on top of stone cap; square cut marked "U. \square S."..... | 912. 793 |

Monticello, about 2 miles above, one-half mile below lower end of Lanes Island (also known as Thompsons Island), about 300 meters back from left bank of river, one-half meter west of north-south fence, about 80 meters upstream from large square 2-story house, in line with center of north-south road and 39 meters south from junction of fences at road, road makes nearly a right angle at this point; tile and pipe (U. S. C. E. p. b. m. 280-2):

Bolt in tile.....
Top of cap.....

Monticello, 5 miles above, about 400 meters above head of Island No. 163, about 600 meters back from left bank of river, in corner of fence on west side of north-south wagon road, on property of Henry Castle, 300 meters back from edge of timber; tile and pipe (U. S. C. E. p. b. m. 281-2):

Bolt in tile.....
Top of cap.....

Bear Island No. 161, at foot of, 300 meters back from left bank of river, one-half meter north of fence on south side of road through John Dyson's land and 70 meters downstream from his house, on public road; tile and pipe (U. S. C. E. p. b. m. 282-2):

Bolt in tile.....
Top of cap.....

Bear Island, about 2½ miles above, 1½ miles back from left bank of river, 42 meters down river from junction of roads, 33 meters down river from angle in fence, one-half meter north of wire fence, about 250 meters down river from J. P. Anderson's house, in public road; tile and pipe (U. S. C. E. p. b. m. 283-1):

Bolt in tile.....
Top of cap.....

CLEARWATER QUADRANGLE.

[Latitude, 45° 15'-45° 30'; longitude, 94°-94° 15'.]

Bench marks near Clearwater.

Clearwater, 3 miles below, about 0.75 mile back from left bank of river, on south side of road, 1 meter west of fence corner on north-south section line between property of Barney Powers and property of B. H. Lee, about 200 meters below house; in public road; tile and pipe (U. S. C. E. p. b. m. 284-1):

Bolt in tile.....
Top of cap.....

Clearwater, opposite, about 200 meters back from left bank of river, 200 meters above wagon road to ferry, on property of W. J. Kirk, 1½ meters west of fence running northerly, 32 meters south of fence corner; tile and pipe. Blazed trees: 18-inch oak, 224° distant 7 meters; 15-inch oak, 249° distant 7.7 meters (U. S. C. E. p. b. m. 285-2):

Bolt in tile.....
Top of cap.....

Clearwater, 3 miles above, about 200 meters back from left bank of river, at head of Island No. 151, on high ridge, in jack oaks, about 100 meters upstream from edge of timber and cultivated field, 16 meters downstream from east-west wire fence, on south side of very large ravine; tile and pipe. Blazed trees: 4-inch oak, 19° distant 4.6 meters; 12-inch oak, 78° distant 12.9 meters; 15-inch oak, 319° 40' distant 20.1 meters (U. S. C. E. p. b. m. 286-2):

Bolt in tile.....
Top of cap..... 1,

St. Augusta Church spire, on public road nearly due east of, one-half meter east of junction of fences on south side of road adjoining property of Mrs. Carrie Bowen and about 150 meters north of her house; tile and pipe (U. S. C. E. p. b. m. 287-1):

| | Feet. |
|-------------------|-----------|
| Bolt in tile..... | 1,009.253 |
| Top of cap..... | 1,013.207 |

ST. CLOUD QUADRANGLE.

[Latitude, 45° 30'–45° 45'; longitude, 94°–94° 15'.]

From point near St. Cloud north along Mississippi River to Rice.

St. Cloud, about 2½ miles below Normal School building, 200 meters back from left bank of river at head of Island No. 139, on property of S. A. Gray, at corner of cultivated field and timber, on high ground, one-half meter south of east-west fence, 27½ meters east of junction of fences; tile and pipe. Blazed trees: 7-inch oak, 86° distant 8.6 meters; 9-inch oak, 146° distant 9.2 meters; 9-inch oak, 249° distant 6.5 meters (U. S. C. E. p. b. m. 288½):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,025.221 |
| Top of cap..... | 1,029.231 |

East St. Cloud, about 500 meters below upper wagon bridge, between Fourth and Fifth streets, on property of Mr. Wilson, 5 meters back from top of left bank of river, 15 meters south of a ravine, in scrub-oak timber; tile and pipe. Blazed trees: 18-inch oak, 94° distant 3.2 meters; 24-inch oak, 242° distant 13.6 meters, 4-inch oak, 333° distant 3.8 meters (U. S. C. E. p. b. m. 289½):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,011.494 |
| Top of cap..... | 1,015.462 |

St. Cloud, on Great Northern Ry. bridge over Mississippi River, 27 inches back from face and 24 inches from lower corner of abutment, about 26 inches below top of rail, leaded vertically into top of lower end of abutment at left-shore end of bridge; copper bolt (U. S. C. E. p. b. m. St. Cloud).....

1,032.189

St. Cloud, near, about 40 meters above a point opposite mouth of Sauk River, 2 inches north of hole in bowlder where copper bolt was leaded by United States Army Engineers from St. Paul office, on top of left bank of Mississippi River, on granite bowlder; highest point (U. S. C. E. t. b. m. 110).....

1,003.955

NOTE.—The copper bolt has been dug out, but t. b. m. 110 is practically at the same elevation.

Sauk Rapids, 1 mile above, 100 meters below foot of Clarks Island, directly opposite small towhead in northwest corner of small cultivated field, at junction of fences, 15 meters back from left bank of river, about 100 meters above a signboard on railroad which reads "Sauk Rapids One Mile," blazed 5-inch oak, 160° distant 11 meters; tile and pipe (U. S. C. E. p. b. m. 290½):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,001.198 |
| Top of cap..... | 1,005.162 |

Sauk Rapids, about 200 meters below, 350 meters above mile-post 77, on Northern Pacific Ry. on east end of upper one of two drainpipes of opening under railroad; on bell of large cast-iron drainpipe directly over mark cut thus □; highest point (U. S. C. E. t. b. m. 112).....

1,006.317

Back Base line above - miles above town of 150 meters back from left bank of river to Vernalis Rapids in corner of fence on west side of public road in property of J. E. Miller. East-west fence is Miller's south line and a center line through s-s 1 and 2. Blazed trees: 10-inch oak, 335° distant 4 meters; 4-inch oak, 71° distant 4.5 meters; 9-inch oak, 71° distant 1 meter; tile and pipe (U. S. C. E. p. b. m. 291):

Bolt in tile..... 1,
Top of cap..... 1,

Little Rice about 200 meters below Rice grange knoll known as, on which a triangulation Vernalis about 400 meters back from left bank of river, a high grassy field, 125 meters south of junction of public one-half meter west of fence in west side of road, on public road. Blazed trees: 10-inch oak, 37° distant 4.5 meters; 4-inch oak, 306° distant 4 meters; tile and pipe (U. S. C. E. p. b. m. 292):

Bolt in tile..... 1,
Top of cap..... 1,

Rice 1 mile below about one-half mile above Brockaway Schoolhouse N. 7° E. property of J. E. Anderson and about 350 meters above his house on open grassy spot 7 meters below an east-west fence which runs 1 meter back from left bank of river. Blazed trees: 10-inch oak, 147° distant 4 meters; 20-inch oak, 287° 30' distant 1 meter; 10-inch oak, 147° distant 4.5 meters; tile and pipe (U. S. C. E. p. b. m. 293):

Bolt in tile..... 1,
Top of cap..... 1,

Rice station 1 mile south of 300 feet west of Northern Pacific Ry., about 10 meters south of section line in open prairie; tile and pipe (U. S. C. E. p. b. m. triangulation Back Base. Rice base line):

Bolt in tile..... 1,
Top of cap..... 1,

Rice about 2 miles below on public road, about one-half mile above ferry and 8 meters below section line, on left bank of river; tile and pipe (U. S. C. E. p. b. m. triangulation River Base. Rice base line):

Bolt in tile..... 1,
Top of cap..... 1,

Rice, 1 1/2 miles below, on high terrace about 200 meters back from left bank of river, 15 meters below junction of fences, one-half meter toward river from fence on north side of road adjoining property of Minneapolis Loan & Trust Co., 190 meters downstream from where road makes an angle and runs north to Rice; log house stands near angle in road, in public road; tile and pipe (U. S. C. E. p. b. m. 294):

Bolt in tile..... 1,
Top of cap..... 1,

From St. Cloud west along Great Northern Ry. to point 3.5 miles west of St. Cloud.

St. Cloud, in 1904 the pipe was dug up, to reach the mark, and replaced with changed elevation (U. S. C. E. p. b. m. 2884)..... 1,

Top of cap..... 1,

East St. Cloud, in 1904 access to the underground mark was had through the pipe and the cap replaced as before (U. S. C. E. p. b. m. 2894)..... 1,

Top of cap..... 1,

St. Cloud, in 1904 the face of the bolt was badly injured, but the setting was undisturbed (p. b. m. St. Cloud).

| | |
|---|----------------------|
| East St. Cloud, on northeast corner of Fifteenth Street and Seventh Avenue, 125 meters from river, 100 meters above lower wagon bridge; highest point of hydrant (C. & G. S. b. m. Hydrant 1)..... | Feet. 1, 037. 144 |
| St. Cloud, on northeast corner of Fifth Avenue and Third Street, west of river; highest point of hydrant (C. & G. S. b. m. Hydrant 2)..... | 1, 036. 416 |
| St. Cloud, on northeast corner of Fifth Avenue and Fourth Street South, west of river; highest point of hydrant (C. & G. S. b. m. Hydrant 3)..... | 1, 036. 136 |
| St. Cloud, on northeast corner of Sixth Avenue and Second Street South, west of river; highest point of hydrant (C. & G. S. b. m. Hydrant 4)..... | 1, 038. 991 |
| St. Cloud, at corner of Fifth Avenue and Great Northern Ry., 1 block west of river, in brick wall of Carter Building, on side facing Fifth Avenue, two bricks south of northeast corner and two bricks above stone foundation, 1.3 meters above sidewalk; red metal disk (C. & G. S. b. m. A)..... | 1, 037. 971 |
| St. Cloud, about 1 mile west of river, in granite wall of Great Northern Ry. passenger station, 0.3 meter north of southeast corner, 30 meters south of main track, 1 meter above platform; $\frac{3}{4}$ inch copper bolt (C. & G. S. b. m. B)..... | 1, 048. 679 |
| St. Cloud, 4.2 kilometers west of, on Fergus Falls division of Great Northern Ry., at first grade crossing east of Sauk River, 15 meters north of railway track, at right-of-way fence, 1 meter east of a road north-south; 3-inch red metal cap (C. & G. S. b. m. C)..... | 1, 047. 794 |
| St. Cloud, 4.8 kilometers west of, on Fergus Falls division of Great Northern Ry., on right or east bank of Sauk River, 13 meters from river and 2 meters above it, 55 meters south of railroad track and 2 meters below it, on highest point of a mass of red granite; $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. D)..... | 1, 043. 095 |

LITTLE FALLS QUADRANGLE.

[Latitude, 45° 45'-46°; longitude, 94° 15'-94° 30'.]

From Rice north along Mississippi River to Little Falls.

| | |
|--|-------------|
| Rice, about 600 meters above Russels Ferry, which is due west of, 400 meters back from left bank of river, in public road, one-half meter east of fence on west side of road, 100 feet above house of George P. McGee, who owns the property on east side of road, property on west side of road belongs to Robert Russel; tile and pipe (U. S. C. E. p. b. m. 295-2): | |
| Bolt in tile..... | 1, 052. 439 |
| Top of cap..... | 1, 056. 408 |
| Platt River, about 1 $\frac{1}{4}$ miles above mouth of, opposite head of Islands Nos. 88 and 89, on property of J. H. Higgins and 230 meters downstream from his house, one-half meter south of east-west fence at edge of timber and cultivated field, 50 meters back from left bank of river. Blazed trees: 18-inch oak, 60° distant 10.6 meters; 18-inch oak, 102° distant 6.4 meters; 15-inch oak, 263° distant 5.6 meters; tile and pipe (U. S. C. E. p. b. m. 296-2): | |
| Bolt in tile..... | 1, 044. 450 |
| Top of cap..... | 1, 048. 413 |
| North Prairie, opposite, on top of high ridge in oak timber, 16 meters south of public road which runs from Royalton to North Prairie ferry, about 100 meters back from corner of fence, 300 meters back from left bank of river. Blazed trees: 15-inch oak stub, 129° distant 9.3 meters; 15-inch oak stub, 228° distant 13.4 meters; tile and pipe (U. S. C. E. p. b. m. 297-2): | |
| Bolt in tile..... | 1, 064. 975 |
| Top of cap..... | 1, 068. 955 |

Royalton bridge, wagon bridge over Mississippi River known as, about 1½ miles above, on top of high terrace, about 400 meters back from left bank of river, on property of Peter McDougall and about 275 meters above his house, one-half meter west of a wire fence at edge of timber and cultivated field, opposite head of Island No. 77, blazed 20-inch oak tree, 79° 25' distant 21 meters; tile and pipe (U. S. C. E. p. b. m. 298-2):

Bolt in tile..... 1,

Top of cap..... 1,

Royalton bridge, 4½ miles above, 450 meters below Cashes Island, 250 meters below Island No. 73, opposite lower end of cultivated field, about 20 meters below a bunch of white birch trees which stand at water's edge (only birches in this vicinity), in timber, 11 meters back from left bank of river; tile and pipe. Blazed trees: 18-inch oak, 20° distant 24.9 meters; 8-inch oak, 83° distant 9.3 meters; 12-inch oak, 274° distant 6.3 meters (U. S. C. E. p. b. m. 299-2):

Bolt in tile..... 1,

Top of cap..... 1,

Little Falls, 4 miles below, at head of Island No. 64, on property of George Kruger and 30 meters below his house, 30 meters toward river from public road, on left bank of river; tile and pipe. Blazed trees: 18-inch oak, 76° distant 9 meters; 15-inch oak, 130° distant 9 meters (U. S. C. E. p. b. m. 300-2):

Bolt in tile..... 1,

Top of cap..... 1,

Little Falls, about 0.75 mile below, at head of Island No. 59, on property of P. W. Hayes, on his south line, at junction of fences, about 200 meters west of public road, in pasture, 400 meters back from left bank of river; tile and pipe. Blazed trees: 18-inch oak, 266° distant 18.4 meters; 10-inch oak, 294° distant 15.4 meters; 12-inch oak, 125° distant 23.8 meters (U. S. C. E. p. b. m. 301-2):

Bolt in tile..... 1,

Top of cap..... 1,

Little Falls, on Hotel Buckman, at southeast corner of First Street and First Avenue South, 6 inches above sidewalk and 34 inches south of northwest corner of hotel, in top of lower step at First Street entrance to hotel; square cut marked "U. □ S." (U. S. C. E. t. b. m. 152)..... 1,

Little Falls, about 1 mile above railroad bridge over Mississippi River, in open place in timber opposite entrance to fair grounds, 200 meters below foot of large island, a wagon road is cut down to river in front of bench mark, 5 meters back from top of left bank of river; tile and pipe. Blazed trees: 5-inch oak, 89° distant 7.9 meters; 8-inch oak, 248° distant 21.6 meters; 8-inch oak, 294° distant 22.5 meters (U. S. C. E. p. b. m. 302-2):

Bolt in tile..... 1,

Top of cap..... 1,

BELLE PRAIRIE QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 94° 15'-94° 30'.]

From Little Falls north along Mississippi River to Island No. 22.

Belle Prairie church, 4½ miles above Little Falls, 300 meters back from left bank of river, in public road, 0.75 meter west of fence on east side of road, 17 meters north of junction of fences, 44 meters north from line of north wall of Belle Prairie church, blazed 18-inch oak tree, 259° distant 1.9 meters; tile and pipe (U. S. C. E. p. b. m. 303-2):

Bolt in tile..... 1,

Top of cap..... 1,

Belle Prairie church, 3 miles above, about 500 meters back from left bank of river, opposite foot of Island No. 45, one-half meter east of fence on west side of road, 2 meters south of fence corner, 15 meters south of Leon Bellefenil's house, in public road, blazed 20-inch oak tree, 306° distant 24 meters; tile and pipe (U. S. C. E. p. b. m. 304-2):

| | Feet. |
|-------------------|-------------|
| Bolt in tile..... | 1, 135. 297 |
| Top of cap..... | 1, 139. 266 |

Fort Ripley, 4½ miles below ferry at, one-half mile below foot of Island No. 38, opposite point on river where timber commences, on property of D. Brauchaud and about 600 meters below his house, one-half meter east of north-south fence, 8 meters south of junction of fences, 100 meters above upper one of two lone pine trees which stand in cultivated field, 300 meters back from left bank of river, blazed 10-inch oak tree, 304° distant 4.4 meters; tile and pipe (U. S. C. E. p. b. m. 305-2):

| | |
|-------------------|-------------|
| Bolt in tile..... | 1, 142. 019 |
| Top of cap..... | 1, 146. 001 |

Fort Ripley ferry, 1½ miles below, opposite foot of Island No. 24, 500 meters below J. F. Kimball's house, adjoining property belongs to W. A. Clark, 0.75 meter from fence on west side of road, 125 meters south of junction of fences, 500 meters back from left bank of river, in north-south wagon road, blazed 7-inch oak tree, 229° distant 3 meters; tile and pipe (U. S. C. E. p. b. m. 306-2):

| | |
|-------------------|-------------|
| Bolt in tile..... | 1, 150. 319 |
| Top of cap..... | 1, 154. 312 |

Fort Ripley station, about 1 mile above, about 150 meters above railroad bridge over Nocosippi River, one-half meter west of fence on east side of track, 8 meters south of line of south wall of house on opposite side of track, on right of way of Northern Pacific Ry., blazed 8-inch oak tree, 281° distant 5.2 meters; southeast corner of house, 74° 26' distant 54.2 meters; tile and pipe (U. S. C. E. p. b. m. 307-2):

| | |
|-------------------|-------------|
| Bolt in tile..... | 1, 160. 116 |
| Top of cap..... | 1, 164. 102 |

Old Fort Ripley, 3 miles above, one-half meter east of an old fence on top of left bank of river, opposite a lone 30-inch elm snag which stands on top of right bank, 200 meters above a large bunch of small pine trees standing near river, directly back of an 18-inch Norway pine tree which stands on slope of river bank and is the only one in the vicinity; tile and pipe. Blazed trees: 18-inch Norway pine, 110° distant 6.2 meters; 10-inch jack pine, 38° distant 7.5 meters (U. S. C. E. p. b. m. 308-2):

| | |
|-------------------|-------------|
| Bolt in tile..... | 1, 159. 502 |
| Top of cap..... | 1, 163. 472 |

Island No. 22, about 200 meters above, on property of George Smith and 170 meters downstream from his house, in pasture, one-half meter west of north-south fence, 50 meters north of fence corner, 300 meters back from left bank of river, lone blazed 8-inch oak tree, 214° distant 11.6 meters; tile and pipe (U. S. C. E. p. b. m. 309-2):

| | |
|-------------------|-------------|
| Bolt in tile..... | 1, 183. 124 |
| Top of cap..... | 1, 187. 097 |

SYLVAN QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 94° 15'-94° 30'.]

Near old Crow Wing ferry.

Old Crow Wing ferry, on left bank of river near, about opposite upper mouth of Crow Wing River, on property of Charles Bailey, 15 meters north from corner of timber, 75 meters back from crest of high ridge. Mr. Bailey's house stands S. 20° E. (magnetic bearing) about 250 meters. Blazed trees: 10-inch oak, 182° distant 13.1 meters; 8-inch oak, 342° distant 6.3 meters; tile and pipe (U. S. C. E. p. b. m. 310-2):

Bolt in tile..... 1,
Top of cap..... 1,

Old Crow Wing ferry, 3 miles above, on top of high ridge, 20 meters back from water's edge on left bank of river, 500 meters below a cultivated field on right bank, low ground along river on both sides of bench mark, an 18-inch Norway pine tree stands on slope of bank 5 meters downstream and a dead snag stands 30 meters upstream on slope of bank; tile and pipe. Blazed trees: 15-inch white pine, 6° distant 6 meters; 18-inch Norway pine, 124° distant 11.2 meters (U. S. C. E. p. b. m. 311-2):

Bolt in tile..... 1,
Top of cap..... 1,

BRainerd QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 94°-94° 15'.]

From Brainerd north along Mississippi River to mouth of Rabbit River.

Brainerd, 3½ miles below railroad bridge, 100 meters below mouth of Buffalo Creek, 50 meters above head of island, on left bank of river, on top of ridge, 30 meters back from water's edge, about 50 meters above a mound; tile and pipe. Blazed trees: 8-inch jack pine, 291° distant 4.8 meters; 10-inch jack pine, 344° distant 3.9 meters; 8-inch jack pine, 85° distant 5.9 meters. (U. S. C. E. p. b. m. 312-2):

Bolt in tile..... 1,
Top of cap..... 1,

Brainerd, 2¼ miles below, about 2 meters east of Northern Pacific Ry. track, one-fourth mile above milepost 3, just below road crossing, on large granite boulder; highest point (U. S. C. E. t. b. m. 195)..... 1,

Brainerd, 1.5 miles below, on Northern Pacific Ry. right of way, one-half mile below milepost 1, at south end of railroad cut, large granite boulder 5 meters east of track, 6 inches north of hole in top of boulder, on highest point; square cut (U. S. C. E. t. b. m. 196)..... 1,

Brainerd, on top of high bank, about 600 meters below lower wagon bridge over Mississippi River, 300 meters back from left bank of river, at corner of fence near southwest corner of Third and Quince streets, 5 meters north of south line of Quince Street, 40 meters north of George Sargent's house and 1 meter northwest of northeast corner of his lot; tile and pipe (U. S. C. E. p. b. m. 313-2):

Bolt in tile..... 1,
Top of cap..... 1,

Brainerd, in southeast corner of sanitarium (Northern Pacific Ry. Hospital) grounds, on right bank of river, at west end of Northern Pacific Ry. bridge over Mississippi River, 2 meters from east fence and 5 meters from south fence around sanitarium grounds; established under the direction of United States Army Engineers' office at St. Paul, Minn.,

in stone 16 inches square and 6 inches thick, sunk 4 feet in ground and surmounted by an iron pipe 4 inches in diameter and 4 feet long, with cast-iron cap at surface of ground marked with letters "U. S. E. B. M." (U. S. C. E. p. b. m. "Sanitarium"):

| | Feet. |
|--|-------------|
| Bolt in stone..... | 1, 207. 947 |
| Top of cap..... | 1, 212. 025 |
| Brainerd, 20 meters from edge of high ground, on prolongation of north-south street (Mill Street) leading from sawmill in northeast, supposed to be in alley of a newly surveyed addition, about 20 feet east of line of ditch running south across meadow lands, on south side of jack-pine grove; tile and pipe. Blazed trees: 8-inch jack pine, 188° distant 11.2 meters; 6-inch jack-pine, 261° distant 15.1 meters, U. S. C. E. p. b. m. triangulation South Base (Brainerd base line): | |
| Bolt in tile..... | 1, 212. 127 |
| Top of cap..... | 1, 216. 103 |
| Brainerd, in center of Mill Street in northeast, about 150 meters from left bank of river, 11 meters nearly south of switch block on Minnesota & International Ry., 40 meters northeast of road crossing, opposite east-west roadway through Brainerd Lumber Co.'s yard; tile and pipe (U. S. C. E. p. b. m. triangulation North Base, Brainerd base line): | |
| Bolt in tile..... | 1, 203. 269 |
| Top of cap..... | 1, 207. 251 |
| Brainerd, in northeast, 25 meters back from left bank of river, in front of X I W sawmill, 25 meters toward river from railroad track and about 250 meters below end of railroad bridge; tile and pipe. Blazed tree: Norway pine, 166° 15' distant 20.5 meters; triangulation North Base, 17° 33' distant 163.8 meters (U. S. C. E. p. b. m. 314-2): | |
| Bolt in tile..... | 1, 204. 919 |
| Top of cap..... | 1, 208. 882 |
| Brainerd, 3 miles above sawmill in northeast, on ridge about 44 feet above water surface, one-half mile above point where river narrows up, 200 meters above a high wooded point (150 feet high), directly back of low point of land, 100 meters above a bay on right bank, 75 meters back from water's edge, on left bank of river; tile and pipe. Blazed trees: Jack pine, 181° distant 12.7 meters; jack pine, 317° distant 5.4 meters; jack pine, 23° distant 10.6 meters. (U. S. C. E. p. b. m. 315-2): | |
| Bolt in tile..... | 1, 215. 073 |
| Top of cap..... | 1, 219. 052 |
| Rabbit River, 600 meters above mouth of, about 100 meters above Island No. 4, on left bank, about 65 meters back from top of bank, surrounded by three large white-pine trees, about 40 meters upstream from highest point of ridge; tile and pipe. Blazed trees: 36-inch white pine, 240° distant 10.3 meters; 24-inch white pine, 331° distant 2.9 meters; 36-inch white pine, 49° distant 13.5 meters (U. S. C. E. p. b. m. 317-2): | |
| Bolt in tile..... | 1, 208. 246 |
| Top of cap..... | 1, 212. 202 |
| From Brainerd north to Hubert along Minnesota & International Ry. | |
| Brainerd, 15 meters north of triangulation North Base, in root of 10-inch jack-pine tree; nail (U. S. C. E. t. b. m. 201)..... | |
| | 1, 205. 572 |
| Leak, about 400 meters south of signboard, 35 meters south of road crossing, about 11 meters east of center of railroad track, in west root of 12-inch pine stump; 20-penny wire nail (U. S. C. E. p. b. m. 3)..... | |
| | 1, 219. 111 |

| | |
|--|----------------------|
| Leaks, about 2 miles from, 250 meters south of milepost 6, 7.5 meters east of center of railway track, in top of 11-inch stump; 20-penny wire nail (U. S. C. E. t. b. m. 5)..... | Feet. 1, 221. 448 |
| Merrifield, about 1½ miles from, about 680 meters north of milepost 6, opposite whistling post, 7 meters east of center of railway track, in root of burnt stump; nail (U. S. C. E. t. b. m. 6)..... | 1, 221. 346 |
| Merrifield station and post office, on west edge of right of way of railroad, at east end of Long Lake, 12½ meters west of center of track, 78 meters south of store end of post-office building belonging to Ernest Miles, 175 meters north of south end of Merrifield siding, one-fourth mile north of milepost 8 from Brainerd, a 16-inch jack-pine tree bearing t. b. m. 8 stands 6 meters west, an 18-inch Norway pine stands 6 meters northwest, both blazed with triangle facing the pipe; tile and pipe (U. S. C. E. p. b. m. Merrifield): | |
| Copper bolt..... | 1, 215. 617 |
| Iron pipe over tile..... | 1, 219. 597 |
| Merrifield, about 1½ miles from, about 900 meters north of milepost 9, 18 meters east of center of track, in north root of 12-inch jack-pine tree; 10-penny wire nail (U. S. C. E. t. b. m. 10)..... | 1, 218. 623 |
| Hubert, about 2 miles southeast from, opposite third telegraph pole north of milepost 11, 20 meters west of center of track, in root of 16-inch jack-pine tree; wire nail (U. S. C. E. t. b. m. 13)..... | 1, 219. 847 |
| Hubert, about 1 mile southeast from, 85 meters west of milepost 12, 14 meters north of center of track, in root of 13-inch jack-pine tree; wire nail. Tree blazed with triangle over nail (U. S. C. E. t. b. m. 14)..... | 1, 220. 473 |
| Hubert, 16 meters west of center of track, 17 meters south of section house, in root of small oak tree; wire nail (U. S. C. E. t. b. m. 16)..... | 1, 204. 506 |

CROSS LAKE QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 94°–94° 15'.]

Bench marks in southeast part of quadrangle near Mississippi River.

| | |
|--|-------------|
| Rabbit River, 3½ miles above mouth of, on top of high ridge, on left bank of river, 100 meters back from water's edge, 75 meters above point where ridge leaves river, one-half mile below Half Moon Marsh, in sec. 1, T. 47 N., R. 30 W. of fourth principal meridian, near a Norway pine tree on top of ridge; tile and pipe. Blazed trees: Norway pine, 91° distant 16.3 meters; 20-inch white pine, 186° distant 37 meters (U. S. C. E. p. b. m. 318-2): | |
| Bolt in tile..... | 1, 239. 128 |
| Top of cap..... | 1, 243. 088 |
| Old Indian Mission, 500 meters above Dr. Camp's house, in timber, 75 meters below mouth of slough, on ridge bank, 30 meters back from left bank of river; tile and pipe. Blazed trees: 15-inch basswood, 257° distant 1.5 meters; 12-inch ash, 348° distant 5.5 meters; 18-inch ash, 75° distant 8.6 meters (U. S. C. E. p. b. m. 319-2): | |
| Bolt in tile..... | 1, 178. 348 |
| Top of cap..... | 1, 182. 314 |
| Pine River, 1½ miles below mouth of, 1 mile above Foster's house, on north slope of ridge, 5 meters back from bank of river, 25 meters upstream from highest point of ridge, in sec. 17, about 0.25 mile north of south line, on left bank of river; tile and pipe. Blazed trees: 6-inch Norway pine, 185° distant 9.6 meters; 10-inch white pine, 268° distant 9.6 meters; 6-inch Norway pine, 237° distant 3.2 meters (U. S. C. E. p. b. m. 320-2): | |
| Bolt in tile..... | 1, 195. 096 |
| Top of cap..... | 1, 199. 066 |

CUYUNA QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 93° 45'–94°.]

In south part of quadrangle near Mississippi River.

| | |
|--|----------------------|
| Pine River, 2½ miles above mouth of, 1 mile below Island Lake, 35 meters back from top of bank, 75 meters below high ridge, 2 meters west of wagon road, in sec. 15, on left bank of river; tile and pipe. Blazed trees: 8-inch ash, 195° distant 15.3 meters; 24-inch oak, 236° distant 34.2 meters; 24-inch oak, 336° distant 15 meters (U. S. C. E. p. b. m. 321–2): | |
| Bolt in tile..... | Feet. 1, 188. 216 |
| Top of cap..... | 1, 192. 163 |
| Towhead Rapids, about three-fourths of a mile below, in sec. 24, about 0.25 mile west of township line, on first bench back from river, opposite a point where high sand bank strikes river, near two 24-inch white-pine trees standing northeast, 54 meters back from left bank of river; tile and pipe. Blazed trees: 24-inch white pine, 302° distant 6.3 meters; 18-inch white pine, 59° distant 15.7 meters; 12-inch white pine, 148° distant 15.2 meters (U. S. C. E. p. b. m. 322–2): | |
| Bolt in tile..... | 1, 194. 076 |
| Top of cap..... | 1, 198. 048 |
| Island No. 1, about 25 meters above head of, on left bank of river, 5 meters back from top of high bank, 15 meters from water's edge, 15 meters downstream from small ravine; tile and pipe. Blazed trees: 15-inch white pine, 62° 20' distant 21 meters; 6-inch white pine, 179° distant 10.6 meters (U. S. C. E. p. b. m. 323–2): | |
| Bolt in tile..... | 1, 205. 552 |
| Top of cap..... | 1, 209. 525 |
| Dean Brook, 1½ miles above, on left bank of river, in sec. 2, on top of high bank 8 meters back from top, at east edge of cultivated field, 200 meters below house on right bank; tile and pipe. Blazed trees: 7-inch jack pine, 278° distant 9 meters; 10-inch jack pine, 217° distant 1.6 meters (U. S. C. E. p. b. m. 324–2): | |
| Bolt in tile..... | 1, 210. 910 |
| Top of cap..... | 1, 214. 879 |
| Hay Creek, 250 meters above mouth of, on left bank of river, on high ground 75 meters back from river, on property of John Doteler, near line fence between land of John Doteler and Frank Doteler, 339° 7' distant 65.1 meters to northwest corner of Frank Doteler's house; tile and pipe (U. S. C. E. p. b. m. 325–2): | |
| Bolt in tile..... | 1, 204. 886 |
| Top of cap..... | 1, 208. 856 |
| Cedar Brook, about 600 meters above mouth of, in cultivated field, just inside fence on south side of public road, 35 meters below junction of fences, 50 meters back from left bank of river, on property of D. McGillis estate, 100 meters above house and on same side of road; tile and pipe (U. S. C. E. p. b. m. 326–2): | |
| Bolt in tile..... | 1, 196. 995 |
| Top of cap..... | 1, 200. 969 |

AITKIN QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 93° 30'–93° 45'.]

Bench marks near Aitkin.

Aitkin, 3 miles below, on property of Conrad Schwab and about 50 meters southeast of his house, 75 meters back from left bank of river, 3 meters east of small ditch, 3 meters west of fence, in sec. 15; tile and pipe.

Blazed trees: 36-inch basswood, 39°, distant 23.1 meters; 8-inch basswood, 105°, distant 3.5 meters; 15-inch ash, 173°, distant 5.3 meters. (U. S. C. E. p. b. m. 327-2):

Bolt in tile..... 1,
Top of cap..... 1,

Aitkin, above foundation at southwest corner of L on south side of Aitkin County courthouse, 8 inches east of corner and 4 feet above ground, courthouse built in 1888, in copper bolt leaded into second course of brick; horizontal furrow, marked "U. S. P. B. M." (U. S. C. E. p. b. m. courthouse)..... 1,

Aitkin, in cultivated field, on west side of street leading to wagon bridge over Mississippi River, 0.5 meter west of fence, 11 meters south of fence corner on property of Hodgeden and McDonald, about 75 meters back from left bank of river; tile and pipe (U. S. C. E. p. b. m. 328-2):

Bolt in tile..... 1,
Top of cap..... 1,

Aitkin, about 1,500 meters above wagon bridge over Mississippi River, about 20 meters back from left bank of river, at extreme lower end of point of timber, on line with east-west road, 650 meters west of angle in road at township line, 0.25 mile south of line between secs. 12 and 24; tile and pipe (U. S. C. E. p. b. m. triangulation Lower Base, Aitkin base line):

Bolt in tile..... 1,
Top of cap..... 1,

From Aitkin northeast along Mississippi River to point near Waldeck.

Aitkin, cut-off about 5 miles above, on right bank on north side of Rice River cut-off, 11 meters north of cut-off, center of narrow strip of bank, 22-inch basswood tree north 5 feet blazed with a triangle; tile and pipe marked "1898" (U. S. C. E. p. b. m. cut-off):

Bolt in tile..... 1,
Top of cap..... 1,

Aitkin, about 4½ miles above, opposite gate in front of house, 10 meters north of gate to river and southwest of corner of house owned by Gasper Vallencourt, in center of road, established by St. Paul office; flat stone and iron pipe (U. S. C. E. p. b. m. 202), top of cap..... 1,

Aitkin, about 7 miles above, p. b. m. is 125 meters from right bank of river and 120 meters west of Biggar's house, 10 meters south of junction of private road at northwest corner of Biggar Brothers' field, midway between two elm trees blazed with a triangle, 1 meter from fence, on east side of State road; tile and pipe marked, "1898" (U. S. C. E. p. b. m. Biggar):

Bolt in tile..... 1,
Top of cap..... 1,

Waldeck, near, 10 miles above Aitkin, 28 meters from right bank of river, 20 meters below gully on east side of road, 16 meters north of northwest corner of Sutton's house, 6 meters east of center of road, 1 meter west of fence along east side of State road; tile and pipe marked "1898" (U. S. C. E. p. b. m. Sutton):

Bolt in tile..... 1,
Top of cap..... 1,

Waldeck, near, about 11 miles above Aitkin, 39 meters west of Dan Smith's house (a small white frame), 9 meters east of east fence along State road near where road turns west, near middle of first bend below Waldeck post office, 3 meters from right bank of river; flat stone and iron pipe; b. m. was established by St. Paul office (U. S. C. E. b. m. 209):

Feet.

Bolt in tile..... 1, 205. 925

Top of cap..... 1, 209. 880

Waldeck, 12 miles above Aitkin, 52 meters from right bank of river, 1 meter west of east fence along State road, on line with east-west fence 4 meters north of Waldeck's house and post office, 30 meters northwest of house; tile and pipe marked "1898" (U. S. C. E. p. b. m. Waldeck):

Bolt in tile..... 1, 206. 937

Top of cap..... 1, 210. 912

Waldeck, near, 21 meters from right bank of river, 66 meters northeast of Mrs. Bertha Fowlds's house, 8 meters southwest of State road, 0.5 meter east of fence in front of Mrs. Fowlds's house, near angle in fence at junction of fences, 15.2 miles above Aitkin; tile and pipe marked "1898" (U. S. C. E. p. b. m. Fowlds):

Bolt in tile..... 1, 208. 042

Top of cap..... 1, 212. 032

Waldeck, near, about 17.5 miles above Aitkin, 1 meter from fence, 3 meters from center of State road, 4 meters above angle in fence at end of lane running east from point in front of Strand's house, 14 meters from right bank of river, 380 meters below James White's house, 700 meters east of Nelson Strand's house, 30-inch elm tree SW. 27.7 meters blazed with a triangle; tile and pipe marked "1898" (U. S. C. E. p. b. m. Strand):

Bolt in tile..... 1, 209. 998

Top of cap..... 1, 213. 962

MCGREGOR QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 93° 15'–93° 30'.]

Near Portage.

Portage, near, about 20 miles above Aitkin, 125 meters below three log houses on right bank; Carlson Hendricks and Toby Carlson live on opposite side of river; on east side of State road, 49 meters from right bank, on high sand point at lower edge of balsam thicket; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Carlson):

Bolt in tile..... 1, 224. 864

Top of cap..... 1, 228. 840

Portage, near, about 23 miles above Aitkin, 290 meters north of Fred Anderson's house, 40 meters above schoolhouse No. 21, 14 meters north of State road, lower edge of small poplar trees, 400 meters from right bank of river; tile and pipe, marked 1898 (U. S. C. E. p. b. m. School):

Bolt in tile..... 1, 222. 093

Top of cap..... 1, 226. 068

VERDON QUADRANGLE.

[Latitude, 46° 45'–47°; longitude, 93° 15'–93° 30'.]

From Portage north along Mississippi River to point near Mississippi.

Portage, near, 7 meters from right bank of river and 5 meters from State road, at log landing belonging to Pat Sanders, 1 mile above Pat Sanders's house, and 26.5 miles above Aitkin; 24-inch elm tree east 15 feet, 10-inch elm south 7 feet, both blazed with a triangle facing p. b. m.; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Pat):

Bolt in tile..... 1, 216. 713

Top of cap..... 1, 220. 693

- Libby, near, 8 meters from right bank of river, opposite mouth of Sandy River, 6-inch Balm of Gilead tree 2 meters southeast, 15-inch basswood 2.8 meters south, 10-inch basswood 2.4 meters northwest, 18-inch basswood 2 meters north, 8-inch box elder 4.5 meters northeast, all blazed with a triangle facing p. b. m.; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Sandy):
- Bolt in tile..... 1,
Top of cap..... 1,
- Libby, near, 5 meters east of State road, on top of right bank of creek draining swamp, 20 meters below center of bridge across creek, 60 meters above junction of State and Doray's roads, 120 meters from right bank of what is known as Big Lagoon; 8-inch spruce tree 3 meters northeast, blazed with a triangle, about 30.3 miles above Aitkin; a triangulation station tile and pipe, marked 1898 (U. S. C. E. p. b. m. Big Lagoon):
- Bolt in tile..... 1,
Top of cap..... 1,
- Libby, near, 33.8 miles above Aitkin, high country on opposite side of river, 0.8 mile below what is known as high bank on river, 60 meters above mouth of creek, 179.9 meters from State road, 30 meters from right bank of river, on top of knoll covered with boulders; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Midway):
- Bolt in tile..... 1,
Top of cap..... 1,
- Libby, near, 36.3 miles above Aitkin, on property of E. B. Wells, 10 meters from right bank of river, 1 meter north and 1 meter east of north-east corner of Mr. Well's house, which is Verdon post office, 1½ meters southeast of 20-inch pine stump 3 feet high, near corner of house; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Wells):
- Bolt in tile..... 1,
Top of cap..... 1,
- Mississippi, near, 39 miles above Aitkin, 3 meters from right bank of river, in edge of meadow, 196 meters above Frank Stone's abandoned house, which is 30 meters above mouth of creek, 125 meters east of State road, 20-inch white-oak tree south 21 meters, blazed with a triangle, old house of Frank Stone torn down and new one erected 30 meters west since p. b. m. was set; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Stone):
- Bolt in tile..... 1,
Top of cap..... 1,
- Mississippi, near, 2 meters from top of right bank of lagoon, 4 meters east of fence line around John Le Moon's house, 15 meters above Le Moon's house; State road is between fence and p. b. m.; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Le Moon):
- Bolt in tile..... 1,
Top of cap..... 1,
- Mississippi, near, about 45 miles above Aitkin, between State road and right bank of river, 12 meters from former and 20 meters from latter, 402 meters below John Tiessen's house, 100 meters below a cedar-pole bridge across ravine. Charred stumps blazed, north 22 feet, east 6.8 feet, southeast 8.5 feet, west 11.5 feet; a triangulation station tile and pipe, marked 1898 (U. S. C. E. p. b. m. Tiessen):
- Bolt in tile..... 1,
Top of cap..... 1,

LA PRAIRIE QUADRANGLE.

[Latitude, 47°-47° 15'; longitude, 93° 15'-93° 30'.]

From point near Mississippi north along Mississippi River to Blackberry.

| | |
|--|-------------|
| Mississippi, near, 47.5 miles above Aitkin, 4 meters from top of bank of old lagoon, in vicinity of Aitkin-Itasca county line, 5-inch oak tree northeast 25 feet, 9-inch oak north 42 feet, 12-inch oak north 60 feet, all blazed with triangles facing p. b. m.; tile and pipe, marked 1898 (U. S. C. E. p. b. m. Vicinity): | Feet. |
| Bolt in tile..... | 1, 254. 861 |
| Top of cap..... | 1, 258. 835 |
| Mississippi, near, about 50 miles above Aitkin, 1½ miles below Split Hand Creek, 5 meters from right bank of river, on high bank 24 meters from State road; white-pine stumps, 40 inches in diameter east 18 feet, 30 inches in diameter north 18 feet, 24 inches in diameter west 15 feet, all blazed with triangles facing p. b. m.; a triangulation station tile and pipe, marked 1898 (U. S. C. E. p. b. m. Shep): | |
| Bolt in tile..... | 1, 254. 709 |
| Top of cap..... | 1, 258. 684 |
| Verna, near, about 52 miles above Aitkin, about 1,090 meters above Split Hand Creek, 800 meters above John Erwin's house, 6 meters from top of high bank, 105 meters above right bank of river where high bank ends, 40 meters from road; triangulation station tile and pipe (U. S. C. E. p. b. m. Split Hand): | |
| Bolt in tile..... | 1, 263. 507 |
| Top of cap..... | 1, 267. 502 |
| Blackberry, near, about 54 miles above Aitkin, 28 meters east from road crossing State road and road from Little Cowhorn Lake and Cowhorn Lagoon and Hamilton's ranch, 4 meters from crossroad; triangulation station tile and pipe (U. S. C. E. p. b. m. Hamilton): | |
| Bolt in tile..... | 1, 266. 478 |
| Top of cap..... | 1, 270. 466 |
| Blackberry, near, about 57 miles above Aitkin, on knoll 45 meters from State road northeast, near cluster of five white-pine trees, 0.5 mile above junction of State and Pokegama Lake roads, 375 meters above Edward Heinke's house, 13 meters north of corner of fence, 30-inch pine tree west 21 feet, 30-inch white pine south 35 feet, blazed with a triangle facing p. b. m. (U. S. C. E. p. b. m. Five Pines): | |
| Bolt in tile..... | 1, 280. 564 |
| Top of cap..... | 1, 284. 545 |
| Blackberry, near, on knoll 150 meters from right bank of river 0.75 mile east of hill that Porcupine triangulation station is on, about same distance south of Phil Zwick's house, about opposite b. m. Blackberry; a triangulation station tile and pipe, marked 1898 (U. S. C. E. p. b. m. Strawberry): | |
| Bolt in tile..... | 1, 296. 550 |
| Top of cap..... | 1, 300. 535 |
| Blackberry, near, 14-foot station over mark which is on high ridge 1 mile from right bank of river, a large pond lies at foot of hill on upper side and another on lower side, two tall dead snags 60 meters southwest; tile and pipe marked 1898 (U. S. C. E. Porcupine triang. sta.). | |

Blackberry, near, near east end of high bridge, about 400 meters from right bank of river, 0.5 mile above b. m. Blackberry, which is on left bank, 400 meters northwest of Phil Zwick's house; tile and pipe marked 1898 (U. S. C. E. Zwick triang. sta.).

Blackberry, about 80 meters west of schoolhouse, about 70 meters west of road crossing, 71 meters east of milepost 105, 10.5 meters north of center of track of Great Northern Ry., a blazed white-pine tree stands 1 meter north of north right of way fence and about 11 meters east of pipe; tile and pipe (U. S. C. E. b. m. Blackberry):

| | Feet. |
|-------------------|-------------|
| Bolt in tile..... | 1, 299. 042 |
| Top of cap..... | 1, 303. 015 |

From La Prairie southeast along Great Northern Ry. and Mississippi River to Jacobson.

La Prairie, near, about halfway between mileposts 109 and 108, at first curve east of Prairie River, 10.5 meters north of center of track; tile and pipe (U. S. C. E. p. b. m. triang. La Prairie):

| | |
|-----------------|-------------|
| Top of cap..... | 1, 283. 097 |
|-----------------|-------------|

La Prairie, near, 176 meters east of milepost 107, 7 meters south of center of track, in large knot on northwest side of large pine stump; wire nail (U. S. C. E. t. b. m. 226).....

1, 295. 637

Blackberry, 10.5 meters north of center of track, 74 meters east of milepost 105, 2.5 meters east of b. m. Blackberry, in bench cut on west root of large burnt white-pine stump; 20-penny wire nail (U. S. C. E. t. b. m. 229)

1, 302. 455

Blackberry, about 80 meters west of schoolhouse, about 70 meters west of road crossing, 71 meters east of milepost 105, 10.5 meters north of center of track; tile and pipe. Blazed white-pine tree stands 1 meter north of north right of way fence about 11 meters east of pipe (U. S. C. E. b. m. Blackberry):

| | |
|-------------------|-------------|
| Bolt in tile..... | 1, 299. 042 |
|-------------------|-------------|

| | |
|-----------------|-------------|
| Top of cap..... | 1, 303. 015 |
|-----------------|-------------|

Blackberry, facing schoolhouse, about 123 meters east of milepost 105, 2 meters east of southeast corner of fence inclosing a grave, 18 meters west of a road crossing railway, about 3 meters south of south right of way fence of Eastern Ry. of Minnesota, in bench cut on northeast foot of a 24-inch white-pine tree; 20-penny wire nail. Tree has a triangle on it over the nail (U. S. C. E. t. b. m. 230).....

1, 301. 756

PORTAGE QUADRANGLE.

[Latitude, 47° 15'-47° 30'; longitude, 94° 15'-94° 30'.]

From Lomond east along Great Northern Ry. to Schley.

Cuba, 100 meters east of west end of siding, 5 meters north of center of track of Great Northern Ry., in south root of 36-inch burnt stump; wire nail (U. S. C. E. t. b. m. 170).....

1, 345. 290

Cuba, 2 miles from, 158 meters west of milepost 158, at foot of embankment on south side of track, in top of 3-foot white-pine stump; wire nail (U. S. C. E. t. b. m. 172).....

1, 339. 751

Schley, 4½ miles from, about 380 meters east of milepost 156, at west end of borrow pit, 5 meters north of center of railroad track, in top of 2-foot pine stump; wire nail (U. S. C. E. t. b. m. 174).....

1, 310. 994

Schley, about 1½ miles from, about 500 meters east of milepost 155, at foot of embankment, 6 meters south of center of track, in root of 16-inch pine stump; wire nail (U. S. C. E. t. b. m. 175).....

1, 319. 951

| | |
|---|----------------------|
| Schley, 55 meters west of signboard reading "Station 1 mile" (meaning 1 mile east to Schley), 436 meters west of milepost 154, 5 meters south of center of track, in north part of top of 30-inch Norway pine stump; wire nail (U. S. C. E. t. b. m. 176) | Feet. 1, 329. 397 |
| Schley, one-third mile from, 736 meters east of milepost 154, 5 meters north of center of track, in southwest root of poplar stump; wire nail (U. S. C. E. t. b. m. 177)..... | 1, 324. 229 |
| Schley, about 2 miles from, 632 meters west of milepost 151, at east end of a fill, 3 meters north of center of track, in small stump; wire nail (U. S. C. E. t. b. m. 179)..... | 1, 317. 907 |

BENA QUADRANGLE.

[Latitude, 47° 15'–47° 30'; longitude, 94°–94° 15'.]

From point 3.5 miles west of Bena east along Great Northern Ry. to point near Nushka.

| | |
|---|-------------|
| Bena, 3½ miles west from, 556 meters west of milepost 149, 5 meters south of center of track, in root of 26-inch pine stump; wire nail (U. S. C. E. t. b. m. 181)..... | 1, 316. 159 |
| Bena, about 1½ miles from, 59 meters west of milepost 147, 3 meters north of center of track, in top of 8-inch birch stump; wire nail (U. S. C. E. t. b. m. 183)..... | 1, 312. 766 |
| Bena, about 1 mile from, 168 meters east of milepost 147, 10 meters south of center of track; tile and pipe; two large Norway pines south of pipe are blazed facing pipe (U. S. C. E. p. b. m. triang. Bigosh): | |
| Bolt in tile..... | 1, 317. 652 |
| Top of cap..... | 1, 321. 637 |
| Bena, 620 meters west of railway station, 287 meters west of milepost 146, 10 meters south of center of track; tile and pipe (U. S. C. E. p. b. m. triang. Bena): | |
| Bolt in tile..... | 1, 316. 336 |
| Top of cap..... | 1, 320. 312 |
| Bena, opposite pump house for water tank and about 75 meters west of station, 21 meters south of main track and 8 meters south of south siding, in bench cut on north side of 28-inch Norway pine stump; small nail (R. R. b. m.=b. m. 117 H. Used by St. Paul United States Engineers office in 1900)..... | 1, 309. 063 |
| Bena, on bank of second cut east of, 205 meters east of milepost 144, 10 meters south of center of railroad track; tile and pipe (U. S. C. E. p. b. m. triangulation Norway Grove): | |
| Bolt in tile..... | 1, 320. 867 |
| Top of cap..... | 1, 324. 830 |
| Bena, about 3 miles east from, 540 meters east of milepost 143, 12 meters north of center of railroad track, in root of 22-inch pine stump; wire nail (U. S. C. E. t. b. m. 188)..... | 1, 319. 312 |
| Bena, 3 miles east from, about 3 meters north of t. b. m. 188, on south side of large Norway pine; bench (R. R. b. m.)..... | 1, 318. 632 |
| Nushka, near, at east end of a fill, 574 meters west of milepost 141, 15 meters north of center of track, in south root of 18-inch Norway pine tree; wire nail (U. S. C. E. t. b. m. 189) | 1, 309. 390 |
| Nushka, 1 meter east of east headblock of switch to siding, 2 meters north of center of track, in top of 12-inch cedar stump; wire nail (U. S. C. E. t. b. m. 191) | 1, 309. 725 |
| Nushka, near, 34 meters east of milepost 138, 12 meters north of center of track, in southeast root of 24-inch charred pine stump; wire nail (U. S. C. E. t. b. m. 192) | 1, 321. 054 |

Nushka, near, 135 meters east of milepost 137, 10 meters south of center of track; tile and pipe (U. S. C. E. p. b. m. triang. Divide.):

| | Feet. |
|-------------------|-----------|
| Bolt in tile..... | 1,319.548 |
| Top of cap..... | 1,323.501 |

DEER RIVER QUADRANGLE.

[Latitude, 47° 15'-47° 30'; longitude, 93° 48'-94°.]

From point near Nushka east along Great Northern Ry. to Deer River.

Nushka, near, 620 meters west of west end of trestle over Mississippi River, 523 meters east of milepost 135, 10.5 meters south of center of track, on top of ridge; tile and pipe (U. S. C. E. b. m. Missisip.):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,304.427 |
| Top of cap..... | 1,308.389 |

Ball Club, near, 58.5 meters north of center of railroad track, about 400 meters east of drawbridge over Mississippi River, on high left bank of river; stone and pipe (Established by St. Paul U. S. Army Engineers' office, 1900. U. S. C. E. b. m. 304):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,292.629 |
| Top of cap..... | 1,296.553 |

Ball Club, about 0.5 mile west of section house, 34 meters west of milepost 133, 10.5 meters south of center of railway track; tile and pipe (U. S. C. E. b. m. Tomahawk):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,301.845 |
| Top of cap..... | 1,305.794 |

Ball Club, at first curve east of, about one-fourth mile east of east end of Ball Club siding, in northeast corner of small cultivated patch of ground, 40 meters south of center of track, about 64 meters east of milepost 132; tile and pipe (U. S. C. E. b. m. Wigwam):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,287.960 |
| Top of cap..... | 1,291.943 |

Ball Club, near, about 365 meters east of milepost 132, on north side of railway track, in stump; nail (t. b. m. 15 C. Established by St. Paul U. S. Army Engineers' office, 1899).....

1,283.849

Starke spur, 46 meters west of headblock of switch, on north bank of ditch on north side of railroad track; tile and pipe (U. S. C. E. p. b. m. triang. Starke):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,284.575 |
| Top of cap..... | 1,288.553 |

Starke spur, 19 meters east of head block of switch, 5 meters south of center of railroad track, in top of large Norway pine stump standing on north edge of borrow pit; nail (t. b. m. 200=T. P. 368 C. Used by St. Paul U. S. Army Engineers' office in 1899).....

1,290.765

Starke, near, 167 meters west of milepost 129, 3.5 meters north of center of railroad track; nail (Used by St. Paul U. S. Army Engineers' office in 1899. U. S. C. E. t. b. m. 202=T. P. 354 C.).....

1,301.487

Deer River, near, 3 meters east of milepost 128, 7 meters south of center of track, in 24-inch Norway pine stump; wire nail (U. S. C. E. t. b. m. 203).....

1,301.897

Deer River, 1 mile west of, on old railroad grade on north side of track, at first curve west of milepost 126, in line with the north rail of tangent east of curve, 244 meters west of beginning of curve; tile and pipe (U. S. C. E. p. b. m. triang. Old Road):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1,292.183 |
| Top of cap..... | 1,296.149 |

| | |
|--|----------------------|
| Deer River, water tank of Great Northern Ry., on top of southwest corner of south one of two west stone piers; small square cut (Used by St. Paul U. S. Army Engineers' office in 1899. U. S. C. E. t. b. m. 206)..... | Feet. 1, 292. 104 |
| Deer River, 100 meters east of crossing of Great Northern Ry. and Minneapolis & Rainy River Ry., on south right of way line of Great Northern Ry.; tile and pipe (U. S. C. E. p. b. m. triang. Deer River): | |
| Bolt in tile..... | 1, 296. 795 |
| Top of cap..... | 1, 300. 798 |
| Deer River, about 0.5 mile south of crossing of Minneapolis & Rainy River Ry. and Eastern Ry., 17 meters south of south end of frame building used as roundhouse, 1 meter west of right-of-way fence, 8.5 meters west of center of track of Minneapolis & Rainy River Ry.; tile and pipe (U. S. C. E. b. m. roundhouse): | |
| Bolt in tile..... | 1, 289. 345 |
| Top of cap..... | 1, 293. 279 |
| Deer River, about 0.5 mile east of station, about 0.25 mile west of railroad bridge over Deer River, on point of high ground, 60 meters south of center of track; stone and pipe (U. S. C. E. b. m. 192): | |
| Bolt in tile..... | 1, 283. 449 |
| Top of cap..... | 1, 287. 380 |
| Deer River, about 0.75 mile east of station, nailed to a pile on south side of railroad bridge over Deer River; staff gage (U. S. Engineer Gage) ... | 1, 280. 506 |
| Deer River, near, about 200 meters west of milepost 124, opposite west end of spur, at south right-of-way line, in top of 10-inch tamarack stump; wire nail (U. S. C. E. t. b. m. 208) | 1, 281. 697 |

COHASSET QUADRANGLE.

[Latitude, 47° 15'–47° 30'; longitude, 93° 30'–93° 45'.]

From Deer River southeast along Great Northern Ry. to point near Cohasset.

| | |
|---|-------------|
| Hull, near, about 320 meters west of milepost 122, at south side of track, in top of 12-inch cedar stump; wire nail (U. S. C. E. t. b. m. 210)..... | 1, 285. 758 |
| Hull, near, 456 meters west of milepost 120, at northwest corner of inclosure around abandoned house near top of grade, 23 meters east of corner of fence, 3 meters south of center of track, on boulder; highest point (U. S. C. E. t. b. m. 212)..... | 1, 313. 715 |
| Hull siding, 175 meters east of east headblock of switch, 6 meters south of center of track, in top of 6-inch poplar stump; wire nail (U. S. C. E. t. b. m. 213)..... | 1, 281. 697 |
| Cohasset, 16 meters north of center of track, 10 meters east of Cohasset sign-board, in south root of 14-inch pine tree, the middle one of three white-pine trees in front of Cook & McHenry's saloon; wire nail (U. S. C. E. t. b. m. 215)..... | 1, 281. 520 |
| Cohasset, in central part of town, about 80 meters east of station platform, 7 meters east and about 23 meters south of the southeast corner of Cook's Hotel, 12 meters north of center of track, 3 meters west of garden fence; stone and pipe (U. S. C. E. b. m. 166): | |
| Bolt in stone..... | 1, 277. 681 |
| Top of cap..... | 1, 281. 602 |
| Cohasset, near, 46 meters east of road crossing, 12.2 meters west of intersection of tangents of north rails of railroad, and practically on line with tangent through north rail east of curve, nearly opposite Pokegama Dam, on north side of track; tile and pipe (U. S. C. E. b. m. Dam): | |
| Bolt in tile..... | 1, 288. 150 |
| Top of cap..... | 1, 292. 123 |

POKEGAMA LAKE QUADRANGLE.

[Latitude, 47°-47° 15'; longitude, 93° 30'-33° 45'.]

From Cohasset southeast along Great Northern Ry. to Grand Rapids.

| | |
|--|----------------------|
| Pokegama Lake, near, about 25 meters below Pokegama Falls, about 20 meters below office of keeper of Pokegama Dam, at top of left bank of Mississippi River, on highest point of granite boulder; point of arrow; stone has letters "U. S. B. M." cut on it near arrow, and b. m. was established in 1874 (U. S. C. E. old U. S. b. m.) | Feet. 1, 279. 561 |
| Pokegama Lake, near, 14 meters northeast of office of keeper of Pokegama Dam, 45 meters back of top of left bank of Mississippi River, at Pokegama Falls, leaded vertically into highest point on largest granite boulder, among other boulders, in midst of old buildings used as quarters in building Pokegama Dam; top of copper bolt, letters U. S. P. B. M. are cut in granite around bolt (U. S. C. E. p. b. m. Pokegama Falls)..... | 1, 286. 307 |
| Pokegama Lake, near, about 20 meters from bank of river, 1 meter south of east-west fence along north side of grass field, about 25 meters upstream from west approach to Pokegama Dam, on right bank of Mississippi River; stone and pipe (U. S. C. E. b. m. 167): | |
| Bolt in tile..... | 1, 278. 511 |
| Top of cap..... | 1, 282. 445 |
| Grand Rapids, at first curve west of, 102 meters south of center of track, at intersection of south rail of tangent east with north rail of tangent west of this curve (U. S. C. E. p. b. m. triang. Grand Rapids): | |
| Bolt in tile..... | 1, 276. 277 |
| Top of cap..... | 1, 280. 250 |
| Grand Rapids, 545 meters west of station, 142 meters east of milepost 112, 24 meters north of track, in south root of 14-inch white-pine tree; wire nail (U. S. C. E. t. b. m. 220)..... | 1, 287. 888 |
| Grand Rapids, at east entrance to Itasca County courthouse, leaded vertically in top of south balustrade of stone steps, 14 inches from face of wall and in center of balustrade; top of copper bolt, letters U. S. P. B. M. are cut around the bolt (U. S. C. E. p. b. m. Balustrade)..... | 1, 289. 243 |
| Grand Rapids, on north line of cemetery, on south side of race track at fair ground, about 150 meters east of exhibit building, nearly opposite b. m. Grand Rapids, one-fourth mile south of right bank of Mississippi River; tile and pipe (p. b. m. triang. Race Track): | |
| Bolt in tile..... | 1, 276. 284 |
| Top of cap..... | 1, 280. 254 |
| Grand Rapids, about 580 meters east of depot, 350 meters west of milepost 111, at north right of way line, in southeast corner of garden; tile and pipe (U. S. C. E. b. m. Grand Rapids): | |
| Bolt in tile..... | 1, 280. 916 |
| Top of cap..... | 1, 284. 889 |
| Grand Rapids, near railroad bridge over Prairie River, leaded vertically into southeast corner of capstone in north end of west abutment, 2.5 meters north of gage line of north rail of track, 0.2 meter from north and east edges of stone; top of copper bolt (U. S. C. E. p. b. m. Prairie River)..... | 1, 283. 029 |

PINE RIVER QUADRANGLE.

[Latitude, $46^{\circ} 30' - 46^{\circ} 45'$; longitude, $94^{\circ} 15' - 94^{\circ} 30'$.]

From Hubert northwest along Minnesota & International Ry. to Mildred.

| | |
|--|----------------------|
| Hubert, about 2 miles northwest from, on north side of farm-road crossing, 127 meters north of milepost 15, 5 meters west of center of track, in stump; wire nail (U. S. C. E. t. b. m. 18)..... | Feet. 1, 225. 483 |
| Pequot, about 5 miles from, 1,000 meters south of milepost 17, about 150 meters north of road crossing, 20 meters west of center of track, in top of 2-foot pine stump; wire nail (U. S. C. E. t. b. m. 20)..... | 1, 203. 514 |
| Pequot, about 4 miles south of, 385 meters north of milepost 17, at south end of cut, 15 meters east of center of track, in root of burnt pine stump; wire nail (U. S. C. E. t. b. m. 21)..... | 1, 221. 106 |
| Pequot, about $2\frac{1}{2}$ miles south of, about 750 meters north of milepost 18, distant one-third length of fill from its south end, 35 meters east of center of track, in southwest root of 15-inch pine tree; wire nail (U. S. C. E. t. b. m. 22)..... | 1, 241. 609 |
| Pequot, about $1\frac{1}{2}$ miles south of, 378 meters south of milepost 20, 16 meters west of center of railroad track, in west root of a double jack-pine tree; wire nail (U. S. C. E. t. b. m. 23)..... | 1, 275. 830 |
| Pequot, 37 meters east of center of railroad track, 20 meters south of old station, at rear of A. L. Cole's store and post office, in southwest root of double Norway pine; wire nail (U. S. C. E. t. b. m. 24)..... | 1, 282. 162 |
| Pequot, in village, in northeast corner of yard of Alfred Lawrence, on south side of street leading west from A. L. Cole's store and post office, 57 meters west of center of track; tile and pipe (U. S. C. E. p. b. m. Pequot): Bolt in tile..... | 1, 277. 527 |
| Top of cap..... | 1, 281. 497 |
| Pequot, about 2 miles north of, 274 meters north of milepost 23, at south end of long fill and north end of long cut, 4 meters west of center of railway track, in north root of stump; wire nail (U. S. C. E. t. b. m. 26)..... | 1, 272. 914 |
| Jenkins, 9 meters north of center of water tank, 11 meters west of center of track of Minnesota & International Ry., in burnt pine stump; wire nail (U. S. C. E. t. b. m. 28)..... | 1, 267. 275 |
| Pine River, about 4 miles south of, opposite sixth telegraph pole north of milepost 26, 40 meters west of center of railroad track, in root of poplar tree; wire nail (U. S. C. E. t. b. m. 30)..... | 1, 275. 057 |
| Pine River, about $3\frac{1}{2}$ miles south of, opposite milepost 27, 20 meters west of center of track, in east root of lone 12-inch poplar tree; wire nail (U. S. C. E. t. b. m. 31)..... | 1, 273. 200 |
| Pine River, about $2\frac{1}{2}$ miles south of, 318 meters south of south end of railroad trestle over Pine River, 35 meters south of road crossing, opposite milepost 28, 17 meters west of center of track, in east root of 14-inch jack pine (tree blazed with triangle over nail); wire nail (U. S. C. E. t. b. m. 32)..... | 1, 280. 224 |
| Pine River, about a mile south of, halfway between mileposts 29 and 30, 640 meters south of trestle over Norway Brook, 5 meters west of center of track, in stump; wire nail (U. S. C. E. t. b. m. 33)..... | 1, 288. 232 |
| Pine River, in village, near wagon road, 16 meters east of center of track, 2.5 meters north of station, 180 meters south of section house, in west root of 14-inch jack-pine tree; wire nail (U. S. C. E. t. b. m. 35)..... | 1, 297. 619 |
| Pine River, in village, 15 meters west of center of track, 1 foot east of right of way fence, 26 meters south of south end of section house; tile and pipe (U. S. C. E. p. b. m. Pine River)..... | 1, 294. 591 |

- Leaded into a vitrified tile, 18 by 18 by 4 inches, buried 3 to 3½ feet below surface of ground, on surface of tile, surrounding bolt, is the inscription "Mississippi River Commission, 1898, U. S. P. B. M."; ¾-inch copper bolt..... 1,
 Pine River, about 1 mile north of, opposite seventh telegraph pole north of milepost 32, 17 meters west of center of track, in new stump of 3-inch jack pine; wire nail (U. S. C. E. t. b. m. 37)..... 1,
 Mildred, about 700 meters south of, 8 meters north of milepost 34, 4½ meters east of center of track, in east root of stump; wire nail (U. S. C. E. t. b. m. 39)..... 1,

MILDRED QUADRANGLE.

[Latitude, 46° 45'-47°; longitude, 94° 15'-94° 30'.]

Near Mildred.

- Mildred, about 1½ miles north of, 83 meters north of milepost 36, on west side of track, at base of fill, in root of burnt stump; wire nail (U. S. C. E. t. b. m. 41)..... 1,
 Backus, about 0.75 mile south of, 6 meters east of milepost 38, 15 meters east of center of track, in northwest root of 10-inch jack pine (tree has triangle over nail); wire nail (U. S. C. E. t. b. m. 43)..... 1,

BACKUS QUADRANGLE.

[Latitude, 46° 45'-47°; longitude, 94° 30'-94° 45'.]

From Backus north along Minnesota & International Ry. to point north of Hackensack.

- Backus, in village, on land of Pine Tree Lumber Co., at brow of hill sloping east, 26 meters east of center of track of Minnesota & International Ry., 41 meters south of wagon road leading west across track, 37 meters north of north end of station, 61 meters north of water tank, a 14-inch and a 10-inch pine tree blazed with triangle facing pipe stand on slope of hill 15½ meters northeast and 22 meters east, respectively, from pipe; tile and pipe (U. S. C. E. p. b. m. Backus):
 Bolt in tile..... 1,
 Top of cap..... 1,
 Island Lake, about 1 mile south of, 340 meters north of milepost 41, opposite Koop's sawmill at "Spur of 42," 13 meters east of center of track, in west root of pine stump; wire nail (U. S. C. E. t. b. m. 46)..... 1,
 Island Lake, about 1 mile north of, 2 meters east of eighth telegraph pole north of milepost 43, in west root of pine stump; wire nail (U. S. C. E. t. b. m. 48)..... 1,
 Island Lake, about 1½ miles north of, at edge of timber, opposite milepost, 44, 17 meters west of center of railroad track, in root of burnt stump; wire nail (U. S. C. E. t. b. m. 49)..... 1,
 Hackensack, about 2½ miles south of, 155 meters north of milepost 45, at north edge of swamp, at south end of small cut, 3 meters west of center of track, in top of stump; wire nail (U. S. C. E. t. b. m. 50)..... 1,
 Hackensack, 1½ miles south of, at north end of tangent, at south end of small cut on curve, 5 meters west of center of track, in top of stump; wire nail (U. S. C. E. t. b. m. 52)..... 1,
 Hackensack, in village, about 10 meters east of main track of railroad, 10 meters north of and in line with front of section house, 90 meters south of station; tile and pipe (U. S. C. E. p. b. m. Hackensack):
 Bolt in tile..... 1,
 Top of cap..... 1,

| | |
|---|----------------------|
| Hackensack, in village, 5 meters north of telegraph pole, 2 meters west of side track, 9 meters east of main track of railroad, 53½ meters south of center of station, in top of embedded granite boulder; center of square hole (U. S. C. E. t. b. m. 53)..... | Fest. 1, 387. 346 |
| Hackensack, about 1 mile north of, 690 meters south of milepost 49, 3 meters east of center of track, in top of burnt stump; wire nail (U. S. C. E. t. b. m. 54)..... | 1, 414. 003 |
| Hackensack, about 2½ miles north of, 1½ telegraph poles north of milepost 50, 7 meters west of center of railroad track, in top of birch stump; wire nail (U. S. C. E. t. b. m. 55)..... | 1, 422. 254 |
| Hackensack, about 3½ miles north of, 1½ telegraph poles south of milepost 51, 20 meters west of center of track, in east root of 8-inch white-pine tree; wire nail (U. S. C. E. t. b. m. 56)..... | 1, 399. 000 |

WALKER QUADRANGLE.

[Latitude, 47°-47° 15'; longitude, 94° 30'-94° 45'.]

From Lothrop north along Minnesota & International Ry. to Walker, thence along Great Northern Ry. to Wilkinson.

| | |
|---|-------------|
| Lothrop, at south end of siding, 7 meters east of center of railroad track, north side of wagon road at road crossing, in top of 2-foot pine stump; wire nail (U. S. C. E. t. b. m. 57)..... | 1, 395. 427 |
| Hunters, one-half mile south of south end of siding, 15 meters east of and opposite water tower known as Hunters water tower, 12 meters east of center of track, on hillside opposite northeast corner of Portage Lake; tile and pipe (U. S. C. E. p. b. m. Portage Lake): | |
| Bolt in tile..... | 1, 389. 147 |
| Top of cap..... | 1, 393. 130 |
| Hunters, on east side of side track, 70 meters north of headblock at south end of switch, in root of large pine stump; nail (U. S. C. E. t. b. m. 60)..... | 1, 387. 432 |
| Hunters, about 1½ miles north of, 237 meters north of milepost 56, 3 meters west of center of track, on bank of lake at end of cut and beginning of fill, in top of 20-inch stump; wire nail (U. S. C. E. t. b. m. 62)..... | 1, 341. 119 |
| Walker, near, on west side of track, in cap of first bent at south end of trestle of Leech Lake Bridge; wire nail (U. S. C. E. t. b. m. 63)..... | 1, 313. 351 |
| Walker, about 3 miles south of, 375 meters south of milepost 58, 3 meters east of center of track, at south end of first cut north of trestle over arm of Leech Lake known as Leech Lake Bridge, on highest point of granite boulder; blue keel mark (U. S. C. E. t. b. m. 64)..... | 1, 304. 118 |
| Walker, about 1½ miles south of, at north end of cut and 282 meters south of milepost 59, 3 meters east of center of track, on granite boulder; highest point (U. S. C. E. t. b. m. 65)..... | 1, 308. 836 |
| Walker, in town of, on top bank of south shore of Leech Lake, on land of Capt. Ely Wright on north side of Cleveland Boulevard and east side of Third Street, two-thirds meter north of north line of and three-fourths meter east of northeast corner of porch of Mr. Wright's cottage; tile and pipe (U. S. C. E. p. b. m. Walker): | |
| Bolt in tile..... | 1, 320. 637 |
| Top of cap..... | 1, 324. 594 |
| Walker, in town of, on northwest corner of Minnesota Avenue and Fifth Street, at southeast corner of store building known as Cole Block, on northeast corner of bedplate under iron column; center of small square cut (U. S. C. E. p. b. m. Cole)..... | 1, 318. 836 |

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|--|----------------------|
| Walker, in south part of town, on knoll on east side of Fifth Street, leaded vertically into top of southwest corner of sandstone cap on northwest pier forming west wing foundation of water tank, "U. S. P. B. M." cut in stone around bolt; top of copper bolt (U. S. C. E. p. b. m. Water Tank). | Feet. 1, 357. 343 |
| Walker, about 0.75 mile west of station, at west end of short cut and east end of long fill where Minnesota & International Ry. becomes parallel to Great Northern Ry., 5 meters north of center of track, on embedded granite boulder, about flush with ground; point in small square cut, with "U. S." cut under square (U. S. C. E. t. b. m. 69)..... | 1, 325. 463 |
| Walker, near, 244 meters north of crossing of Minnesota & International and Great Northern railroads, 3 meters west of center of track of Great Northern Ry., in east root of 30-inch white-oak stump; wire nail (U. S. C. E. t. b. m. 71)..... | 1, 308. 915 |
| Walker, near, 135 meters south of south end of railroad cut, 780 meters north of center of drawbridge 59 over Kabekona Narrows, about 16 meters west of center of track of Great Northern Ry., at north edge of bottom along Kabekona Narrows, in northeast root of 3½-foot white-pine tree having a hollow burnt on south side; wire nail (U. S. C. E. t. b. m. 72).. | 1, 304. 748 |
| Walker, near, 770 meters north of center of drawbridge 59 over Kabekona Narrows, 12 meters east of center of track of Great Northern Ry., on root of 13-inch black-oak tree; bench cut (R. R. b. m.)..... | 1, 301. 655 |
| Leech Lake, about 1 mile south of, 15 meters north of signboard reading "Drawbridge one mile," 2½ meters east of center of track of Great Northern Ry., in middle of top of 2-foot Norway pine stump; 20-penny wire nail (U. S. C. E. t. b. m. 73) | 1, 329. 459 |
| Leech Lake, on Great Northern Ry., 24 meters west of center of track, 15 meters west of west side of and directly opposite center of water tank, 4 meters east of edge of timber, 806 meters south of milepost 124, at siding; tile and pipe (U. S. C. E. p. b. m. Leech Lake): | |
| Bolt in tile..... | 1, 331. 874 |
| Top of cap..... | 1, 335. 827 |
| Leech Lake, about 2 miles north of, 618 meters north of milepost 125, 3½ meters west of center of track, in top of 14-inch poplar stump; wire nail (U. S. C. E. t. b. m. 77) | 1, 313. 973 |
| Wilkinson, about 3 miles south of, about 200 meters north of milepost 127, 8 meters east of center of track of Great Northern Ry., in root of burnt stump; wire nail (U. S. C. E. t. b. m. 78)..... | 1, 309. 554 |
| Wilkinson, about 2 miles south of, 822 meters north of milepost 128, 5 meters east of center of track, cut on highest point of boulder projecting about 3 inches out of ground among three higher boulders; top of knob (U. S. C. E. t. b. m. 79)..... | 1, 302. 278 |
| Wilkinson, near, 444 meters south of milepost 130, at north end of borrow pit; 15 meters west of center of track of Great Northern Ry., in 8-inch spruce stump; wire nail (U. S. C. E. t. b. m. 80)..... | 1, 304. 092 |
| Wilkinson, 7 meters north of northern one of two hand-car houses, 5 meters west of center of track of Great Northern Ry., in 8-inch stump; wire nail (U. S. C. E. t. b. m. 81)..... | 1, 315. 388 |

CASS LAKE QUADRANGLE.

[Latitude, 47° 15'–47° 30'; longitude, 94° 30'–94° 45'.]

From Wilkinson north along Great Northern Ry. to Farris.

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|---|-------------|
| Wilkinson, about 1½ miles north of, at east end of Steamboat Lake, 201 meters south of south end of drawspan of drawbridge 61 over Steamboat River, 19 meters east of center of railroad track, 3 meters east of edge of bank of borrow pit, about 18 meters from two Indian graves, on high ground near old Indian hut; tile and pipe (U. S. C. E. t. b. m. Steamboat Lake): | Feet. |
| Bolt in tile..... | 1, 305. 050 |
| Top of cap..... | 1, 309. 010 |
| Wilkinson, about 3 miles north of, a little north of milepost 133, at north edge of swamp, at edge of right of way, 15 meters east of center of track, in west root of 16-inch elm tree; wire nail (U. S. C. E. t. b. m. 85)..... | 1, 312. 599 |
| Wilkinson, about 4 miles north of, 150 meters north of milepost 134, 4 meters from track, in west edge of top of 2-foot pine stump; 20-penny wire nail (U. S. C. E. t. b. m. 86)..... | 1, 335. 633 |
| Cass Lake, about 5 miles south of, 415 meters north of milepost 135, 2½ meters east of center of track, in sawed bench on large pine stump; wire nail (U. S. C. E. t. b. m. 87)..... | 1, 337. 645 |
| Cass Lake, about 3½ miles south of, 612 meters south of milepost 137, 5½ meters east of center of track, in top of 4-foot white-pine stump; wire nail (U. S. C. E. t. b. m. 89)..... | 1, 341. 024 |
| Cass Lake, about 2 miles south of, 374 meters south of milepost 138, 160 meters south of road crossing, 6 meters east of center of track, in top of 12-inch pine stump; wire nail (U. S. C. E. t. b. m. 90)..... | 1, 331. 126 |
| Cass Lake, in Y at junction of Park Rapids division of Great Northern Ry. and main line, in south fork of Y on line of south line tangent produced, 113 meters north of headblock of switch at south point of Y, 12.6 meters west of center of track of east leg and 23.4 meters east of track of west leg of Y; tile and pipe (U. S. C. E. p. b. m. Wye): | |
| Bolt in tile..... | 1, 330. 801 |
| Top of cap..... | 1, 334. 787 |
| Cass Lake, about 2 miles west of station, 10 meters west of west end of bridge 231, 14 meters south of center of track of Great Northern Ry., in top of 30-inch pine stump; wire nail (U. S. C. E. t. b. m. 93)..... | 1, 319. 334 |
| Farris, near, 48 meters east of milepost 102, 9 meters west of signpost marked "W/X" (whistle for road crossing), 9 meters south of center of track, in top of 10-inch jack-pine stump; wire nail (U. S. C. E. t. b. m. 94)..... | 1, 343. 878 |
| Farris, near, 298 meters west of milepost 101, 5 meters south of center of track, on bank of cut, in small pine stump; wire nail (U. S. C. E. t. b. m. 97)..... | 1, 354. 450 |
| Farris, near, 170 meters west of milepost 100, 62 meters east of point where water's edge of lake is nearest railroad, 19 meters south of water's edge of Midge Lake, 22 meters north of center of track, in scattered jack-pine trees on slope of south bank of Midge Lake; tile and pipe; two blazed jack pines stand east 3.1 meters and 4.7 meters, respectively, two others stand westerly 3.3 meters and 4.8 meters, respectively; telegraph pole stands 11 meters south (U. S. C. E. p. b. m. Midge Lake): | |
| Bolt in tile..... | 1, 327. 179 |
| Top of cap..... | 1, 331. 146 |
| Farris, near, 196 meters west of milepost 99, 4½ meters north of center of track, in top of 13-inch stump; wire nail (U. S. C. E. t. b. m. 101)..... | 1, 327. 219 |

From Cass Lake east along Great Northern Ry. to Lomond.

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| Cass Lake, at extreme west end of Great Northern Ry. roundhouse, leaded vertically into sill of double door to boiler room, 3½ inches from west edge of sill and 4½ inches from north end of sill; top of copper bolt (U. S. C. E. p. b. m. Roundhouse)..... | Feet. 1, 324. 590 |
| Cass Lake, in southeast part of town, about 500 meters south of railroad, 200 meters west of lumber yard of Scanlan & Gibson Lumber Co., on north side of Pike Bay, on top of high bank at east end of ridge; stone and pipe (U. S. C. E. b. m. 347): | |
| Bolt in stone..... | 1, 328. 337 |
| Top of cap..... | 1, 332. 274 |
| Cass Lake, 1½ miles from, on south slope of high piece of hill left between railroad cut and Pike Bay, 440 meters west of milepost 162, 9 meters south of center of track, on slope of north bank of Pike Bay; stone and pipe (U. S. C. E. b. m. 342): | |
| Bolt in stone..... | 1, 314. 587 |
| Top of cap..... | 1, 318. 514 |
| Lomond, near, 133 meters west of milepost 161, 5 meters north of track, in 16-inch jack-pine stump; wire nail (U. S. C. E. t. b. m. 169)..... | 1, 322. 258 |
| Lomond, 15 meters east of logging spur which leaves main line of railroad, just below loading works at end of spur track, trees in vicinity blazed facing pipe, on high bank at southeast corner of Cass Lake; tile and pipe (U. S. C. E. p. b. m. Lomond Spur): | |
| Bolt in stone..... | 1, 309. 003 |
| Top of cap..... | 1, 312. 977 |
| Lomond, on low bank of Cass Lake, 10 meters back of water's edge, about 100 meters east of loading works at end of spur; stone and pipe (U. S. C. E. b. m. 337): Top of cap..... | 1, 305. 582 |

BEMIDJI QUADRANGLE.

[Latitude, 47° 15'-47° 30'; longitude, 94° 30'-94° 45'.]

From Farris northwest along Great Northern Ry. to Bemidji, thence west along Mississippi River to p. b. m. Colletts.

| | |
|---|-------------|
| Rosby, about 2 miles east of, 212 meters northwest of milepost 98, 38 meters west of road crossing, at edge of small patch of plowed ground, 38 meters west of road crossing, directly opposite a log farmhouse, 11 meters north of center of track, in top of 30-inch Norway pine stump; wire nail (U. S. C. E. t. b. m. 102)..... | 1, 331. 556 |
| Rosby, about 0.75 mile east of, 75 meters west of culvert 223, 8 meters north of center of track, in east root of 30-inch Norway pine stump; wire nail (U. S. C. E. t. b. m. 103)..... | 1, 338. 420 |
| South Bemidji, near, 10 meters west of milepost 95, 6 meters north of center of track, in top of 12-inch tamarack stump; wire nail (U. S. C. E. t. b. m. 105)..... | 1, 348. 718 |
| South Bemidji, near, 97 meters west of milepost 93, 4 meters west of road crossing, 5 meters south of center of track, in west root of 10-inch jack-pine stump; wire nail (U. S. C. E. t. b. m. 107)..... | 1, 358. 744 |
| South Bemidji, near, a little west of milepost 92, 48 meters east of road crossing, 1 foot north of north right of way fence, in top of 12-inch pine stump; wire nail (U. S. C. E. t. b. m. 108)..... | 1, 360. 214 |
| Bemidji, one-half mile east of, on north line of Great Northern Ry., one-third mile east of point where Mississippi River empties into Lake Bemidji, on north side of and 75 meters east of west end of deep cut, at west end of small garden; knoll through which railroad passes and on which point stands is covered on slope with brush and timber; it is about | |

| | | |
|--|--|-----------|
| 50 meters south of Minnesota & International Ry. and about 200 meters south of south end of Lake Bemidji, in SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 16, T. 146 N., R. 33 W.; tile and pipe (U. S. C. E. p. b. m. triang. Bemidji): | | Feet. |
| Bolt in tile..... | | 1,362.320 |
| Top of cap..... | | 1,366.299 |
| Bemidji, 8 meters east of east end of station of Great Northern Ry., 10 meters north of north side of station, in north root of 15-inch pine stump; wire nail (U. S. C. E. t. b. m. 111)..... | | 1,348.898 |
| Bemidji, on west side of Irving Avenue, 1 foot north of north right of way fence of Great Northern Ry., 37 meters north of center of wagon bridge over railroad cut, 83 meters south of center of Second Street, in south-east corner of yard of E. J. Willets; tile and pipe (U. S. C. E. p. b. m. Willets): | | |
| Bolt in tile..... | | 1,357.743 |
| Top of cap..... | | 1,361.717 |
| Bemidji, on west side of Irving Avenue, between Second and Third streets, leaded vertically into west end of two south stone abutments of city water tank, in southeast corner, about 3 inches from either edge, between U. and S. cut on stone; top of copper bolt (U. S. C. E. p. b. m. Bemidji tank)..... | | 1,361.172 |
| Bemidji, 1.6 miles west of station, 73 meters west of head block of switch where logging spur leaves main line of Great Northern Ry., 11 meters south of spur track, at farm road crossing, in top of 10-inch pine stump; wire nail (U. S. C. E. t. b. m. 114)..... | | 1,365.778 |
| Bemidji, near, 150 meters south of northwest corner of sec. 24, T. 146 N., R. 34 W., 13 meters east of center of road leading south over Dorman's bridge across Mississippi River, on top of left bank of Mississippi River; tile and pipe (U. S. C. E. p. b. m. Dorman). Blazed trees stand as follows: One north 9 meters, one east 5 meters, two south $8\frac{1}{2}$ meters, and one bearing t. b. m. 119 10 meters southwest: | | |
| Bolt in tile..... | | 1,374.722 |
| Top of cap..... | | 1,378.695 |
| Bemidji, near, 12 meters west of logging road that leads north from Collette's logging camp, which stands on shore of Twin or Loon Lake 1 mile south of this point, 320 meters west of point opposite new log house standing on north or left bank of the river; 8-inch oak tree bearing t. b. m. 125, stands 1.8 meters east, double birch tree stands 3 meters north, and a 10-inch elm stands 6 meters north, on right bank of Mississippi River, 11 meters from water's edge; tile and pipe (U. S. C. E. p. b. m. Collette): | | |
| Bolt in tile..... | | 1,361.906 |
| Top of cap..... | | 1,365.889 |
| MOOSE QUADRANGLE. | | |
| [Latitude, 47° 15'-47° 30'; longitude, 95°-95° 13'.] | | |
| From Permanent bench mark Triangulation Station County Line southwest along Mississippi River to Lake Itasca. | | |
| Maltby, 2 $\frac{1}{2}$ miles northwest of, 8 meters south of north line of Hubbard County, corner of secs. 31, 32, 5, and 6 stands east 46 meters, 22-inch Norway pine tree stands east-northeast 61 meters, 500 meters northwest of Albert Nelson's house, 1 $\frac{1}{2}$ miles southeast of Mississippi River, 10 miles southwest of Bemidji, on ridge covered with low brush and scattered pine snags; tile and pipe (U. S. C. E. p. b. m. triang. County Line): | | |
| Bolt in tile..... | | 1,467.665 |
| Top of cap..... | | 1,471.654 |

Hennepin River, near mouth, 5 meters from top edge of bank, in clump of jack-pine trees (four of them blazed), 65 meters north of where river first touches base of high bank, one-half mile below mouth of Hennepin River (river runs north along this bank), on high right bank of Mississippi River; tile and pipe (U. S. C. E. p. b. m. Hennepin):

Bolt in tile..... 1,

Top of cap..... 1,

"The Rapids," near, about 30 meters south of ford where Moose road crosses river, 60 meters north of dam in river, said to be 3 miles north of the mouth of La Salle River (river runs north here), on top of a knoll on first bank on right bank of Mississippi River; tile and pipe (U. S. C. E. p. b. m. Rapids):

Bolt in tile..... 1,

Top of cap..... 1,

La Salle River, immediately east of mouth of, on top and near west point of ridge on right bank of Mississippi River; tile and pipe, 40 meters southeast to settler's log cabin in ravine, 13 meters northeast to blazed 8-inch jack pine (U. S. C. E. p. b. m. La Salle):

Bolt in tile..... 1,

Top of cap..... 1,

Prospect Hill, on top of, about 20 meters east of bank where it slopes down abruptly west into valley of the Mississippi, about 120 meters west of north-south road over hill known as Itasca road about 0.25 mile north-west of junction of Itasca road with road from Smith's camp; tile and pipe (U. S. C. E. p. b. m. triang. Prospect Hill):

Bolt in tile..... 1,

Top of cap..... 1,

Lake Itasca, near, 5 meters northeast of road leading to Mississippi River from Otto Sherratt's house, 400 meters northwest of junction of roads, which junction is 175 meters northwest of Sherratt's house, pipe is 180 meters east of Mississippi River at its nearest point and 280 meters east-southeast from bridge over the river, in SE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 22, T. 14 N., R. 36 W., four blazed jack-pine trees stand 15 meters northwest, 20 meters north, 13 meters northeast, and 65 meters east-northeast, respectively, from pipe, on slope of narrow ridge; tile and pipe (U. S. C. E. p. b. m. Sherratt):

Bolt in tile..... 1,

Top of cap..... 1,

LAKE ITASCA QUADRANGLE.

[Latitude, 47°-47° 15'; longitude, 95°-95° 15'.]

Near Lake Itasca.

Lake Itasca, on top of east bank of, 0.5 meter west of fence corner and in line with fence marking north boundary of Itasca State Park, about 120° distant 105 meters, from house occupied by Mr. Rust, large white-pine tree at water's edge 10 meters southwest of pipe is blazed facing pipe; tile and pipe (U. S. C. E. p. b. m. Park Line):

Bolt in tile..... 1,

Top of cap..... 1,

Lake Itasca, near, about 50 meters east of center of west line of sec. 1, T. 143 N., R. 36 W., about 600 meters northeast of Itasca State Park commissioner's house, on low knoll in dense growth of poplar and aspen trees, knoll is on edge of ridge which slopes rapidly southeast toward

Floating Bog Creek and is about 50 meters west of deep ravine, a lone Norway pine stands on south slope of knoll 26 meters from pipe; tile and pipe (U. S. C. E. p. b. m. triang. Itasca):

Bolt in tile..... 1, 530. 915

Top of cap..... 1, 534. 905

Lake Itasca, 51 meters east of east bank of, 16 meters west of angle in road, on north side of road leading to barn, 64.5 meters south of park commissioner's house in Itasca State Park; tile and pipe (U. S. C. E. p. b. m. Park House):

Bolt in tile..... 1, 488. 340

Top of cap..... 1, 492. 317

COLLEGEVILLE QUADRANGLE.

[Latitude, 45° 30'–45° 45'; longitude, 94° 15'–94° 30'.]

From St. Joseph west along Great Northern Ry. to Avon.

St. Joseph, 300 meters west of, on Great Northern Ry., 18 meters south of track, in northeast corner of wood lot belonging to Mrs. Loe, 1 meter from fences, 2 meters above track. Blazed trees: 6 inch oak, SSW., 9.1 meters; 7-inch oak, west by south 7.3 meters; 8-inch oak, south, 5.2 meters; in stone post 4 feet long; $\frac{1}{4}$ -inch copper bolt (lettered by mistake U. S. S. W.) (C. & G. S. b. m. E)..... 1, 089. 925

Collegeville, on frame building belonging to St. John's University and used as express and ticket office, 30 meters south of railroad track, 17 meters west of road to university, in east (granite) foundation wall, 3 meters from northeast corner and 0.5 meter above ground; $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. F)..... 1, 095. 562

Collegeville, 55 meters east of house belonging to Henry Broker, 80 meters northeast of building used as express and ticket office; 37 meters east of road to St. John's University, 20 meters north of railroad track, at right of way fence; $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. G)..... 1, 094. 680

Avon, 3.3 kilometers east of, on eastern edge of Kepper Lake, on east side of culvert 17 (red sandstone), on upper face of second stone from top, 4.1 meters north of center of railroad track, 0.9 meter below top of rail; bottom of hole (C. & G. S. b. m. H)..... 1, 130. 779

Avon, foundation (red sandstone) of Great Northern Ry. water tank, 65 meters east of Fourth Street and 3 meters north of main track, on top stone of west pier nearest the track, on southwest corner of stone, about 0.7 meter above ballast; bottom of hole..... 1, 131. 747

NOTE.—There is a similar cut in the southeast corner of the stone, not lettered, which is not the bench mark.

Avon, northeast corner of Fourth Street and Pembina Avenue, on Great Northern Ry. property, 7 meters east of center of Fourth Street, 10 meters north of center of Pembina Avenue, 18 meters north of Avon Hotel, 42 meters south of main track; $\frac{1}{4}$ -inch copper bolt..... 1, 129. 669

ALBANY QUADRANGLE.

[Latitude, 45° 30'–45° 45'; longitude, 94° 30'–94° 45'.]

From Albany west along Great Northern Ry. to Freeport.

Albany, 1.4 kilometers east of, at crossroads, at corner of wood lot belonging to Joseph Lehner, at grade crossing, 23 meters north of track, 0.5 meter outside right of way fence, 22 meters west of center of road parallel to track, 0.5 meter outside wood lot fence; 3-inch red-metal cap (C. & G. S. b. m. K)..... 1, 183. 406

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|--|----------------------|
| Albany, northwest corner of Fourth and Railroad streets, in Kraker Building, 64 meters north of main railroad track, in the dressed upper surface of granite foundation wall, under north side of show window facing on Fourth Street, 4.4 meters north of front edge of sidewalk on Railroad Street, 1.9 meters west of front edge of sidewalk on Fourth Street, and 8 centimeters above sidewalk, 6 centimeters south of granite pillar, 7 centimeters from outer edge of foundation, and 3.2 meters north of front corner of building; $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. L) | Feet. 1, 206. 277 |
| Albany, at corner of Fourth and Railroad streets, in front of Kraker Building; highest point of hydrant (hydrant 5) | 1, 207. 846 |
| Freeport, in school building (of yellow brick) on Micklisch Avenue, 200 meters east of station, in upper surface of granite sill at front door, 30 centimeters above foundation wall, 4.5 centimeters from east side of the doorway, 3.5 centimeters from front edge of sill; $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. M)..... | 1, 239. 906 |
| Freeport, on Micklisch Avenue, 50 meters west of station, in foundation of town water tank (a tower of steel, about 40 meters high), in the northwest part of upper surface of northwest pier, in red sandstone, 30 centimeters above ground and facing the street; red metal disk (C. & G. S. b. m. N)..... | 1, 243. 528 |
| Freeport, on northwest corner of Micklisch Avenue and Main Street, in front of Central Hotel; 40 meters north of the main railroad track; highest point of hydrant (hydrant 6) | 1, 245. 884 |

SAUK CENTER QUADRANGLE.

[Latitude, 45° 30'-45° 45'; longitude, 94° 45'-95°.]

From Freeport northwest along Great Northern Ry. to Sauk Center.

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|---|-------------|
| Melrose, 2.9 kilometers east of, 400 meters west of Sauk River, 2 meters north of center of track, 1 meter below top of rail, 1.3 meters above ground, in sandstone culvert, 0.09 meter west of east edge of west abutment; bottom of hole (C. & G. S. b. m. O)..... | 1, 181. 494 |
| Melrose, on Second Street South, between Fifth and Sixth avenues East, 200 meters east of station, 100 meters east of cathedral, opposite yellow-brick house, at right-of-way fence, 23 meters south of railroad, 20 meters north of traveled street, in stone post; top of $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. P) | 1, 210. 884 |
| Melrose, at northeast corner of St. Bonifacius Cathedral, on the southwest corner of Second Street South and Fifth Avenue East, at foot and northeast corner of stairs leading to north entrance, smooth, rounded, conical top of granite post, being most northern of six similar posts, about 1 meter in height, standing in a north-south line and forming part of masonry steps; top of post (C. & G. S. b. m. City 1)..... | 1, 213. 655 |
| Melrose, at corner of Main Street and Fifth Avenue East, northeast corner of Bank of Melrose building; top of granite sill (C. & G. S. b. m. City 2).. | 1, 213. 718 |
| Melrose, on southeast corner of Riverside Avenue and Third Avenue West, 70 meters north of railroad, at northwest corner of Dederich subdivision, adjoining land of H. Dederich, on street lines, the north-south quarter-section line through sec. 34, T. 125, R. 33, runs through center of street west of bench mark, in stone post; top of $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. Q) | 1, 207. 104 |
| Melrose, front door of city hall, center of stone sill (City 3)..... | 1, 214. 141 |
| Melrose, at Third Avenue, at north-south quarter-section line through sec. 34, T. 126, R. 33; top of rail (City 4)..... | 1, 212. 773 |

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| alrose , 3.7 kilometers west of, on railroad bridge over Sauk River, 55 meters west of highway, near large steel highway bridge, 3.3 meters south of center of track, 0.4 meter below top of rail, 0.2 meter east of west edge of east abutment (red sandstone), 2.7 meters from the ground, in horizontal surface; bottom of hole (C. & G. S. b. m. R)..... | Fest. 1,212.124 |
| auk Center , 3.5 kilometers east of, at grade crossing, 22 meters north of track, 10 meters east of traveled road, at the corner of the highway line, the right-of-way fence, and scrub-oak land belonging to Nels Anderson and Albert Hatch; 3-inch red-metal cap (C. & G. S. b. m. S)..... | 1,253.180 |
| Sauk Center , in east end of station (yellow brick), 4.5 meters north of southeast corner, 10 meters north of center of main track, in face of red sandstone window sill, 0.12 meter south of north end and 0.075 meter from upper and lower edges of sill, 1.3 meters above level of rail; $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. T)..... | 1,258.147 |
| Sauk Center , on south side of Railroad Avenue, 75 meters south of main track, opposite point 100 meters west of station, in northeast corner of lot of Joseph Parker, 20 meters east of his house, 2 meters south of 8-inch box-elder tree, in stone post; top of $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. U)..... | 1,258.931 |
| Sauk Center , at corner of Fifth and Maple streets; highest point of hydrant (hydrant 7)..... | 1,255.899 |
| Sauk Center , at corner of Fifth and Elm streets; highest point of hydrant (hydrant 8)..... | 1,252.104 |
| Sauk Center , at corner of Sixth and Getty streets; highest point of hydrant (hydrant 9)..... | 1,250.122 |

OSAKIS QUADRANGLE.

[Latitude, 45° 45'–46°; longitude, 95°–95° 15'.]

From Sauk Center northwest along Great Northern Ry. to point near Nelson.

| | |
|---|-----------|
| West Union , 4.2 kilometers east of, at grade crossing 300 meters west of Sauk River; 22 meters south of track, in northwest corner of pasture belonging to Charles Calkins, at corner of right-of-way fence and highway fence, 12 meters east of traveled road, in stone post; top of $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. V)..... | 1,284.649 |
| West Union , 54 meters south of track, 50 meters west of station, at northeast corner of pasture belonging to Ed. Craig, 20 meters west of Main Street, 10 meters north of frame store, in stone post; top of $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. W)..... | 1,332.629 |
| West Union , in most eastern of three brick piers in grain elevator of Lee & Gingery, 14 meters south of railroad track, 5 meters west of east end of building, 1.17 meters from the ground and 0.32 meter west of east side of pier, on a copper bolt leaded into north face of pier; center of diagonal cross (C. & G. S. b. m. X)..... | 1,340.207 |
| West Union , 0.6 kilometer west of, 35 meters north of track, 70 meters west of grade crossing, at the right-of-way fence which is highway line for east-west road, in post set in hard clay; 3-inch red-metal cap (C. & G. S. b. m. Y)..... | 1,338.889 |
| aukis , 3.4 kilometers east of, at grade crossing, 20 meters west of track of Great Northern Ry., 8 meters south of traveled road at corner of right-of-way fence, highway line, and land of K. Bjerkus; 3-inch red-metal cap (C. & G. S. b. m. Z)..... | 1,359.213 |
| aukis , 3 miles south of, in sec. 7, T. 127, R. 35, in east (granite) wall of barn of C. A. Marthaler, 1.8 meters south of doorway, 2 meters north of south end of wall, 1.1 meters above ground; $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. A ₁)..... | 1,391.919 |

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| Osakis, 3 miles south of town, near center of sec. 7, T. 127, R. 35, on land owned by C. A. Marthaler, nearly 0.5 mile east of his house, on hill on north side of wheat field, near nail in terra-cotta pipe; square hole (Osakis triang. sta.)..... | Feet. 1, 404. 288 |
| Osakis, 50 meters east of station, 3 meters south of track, under Great Northern Ry. water tank, on east pier (sandstone) of two next to track, 0.05 meter southwest of northeast corner of pier, at level of the ground; bottom of hole..... | 1, 344. 266 |
| Osakis, 120 meters west of station, 70 meters south of track, southeast corner of Main and Second streets, in top surface of granite sill at northwest corner of Metcalf's saloon, 2.3 meters from west edge of walk, 0.28 meter south of brick corner post, 0.1 meter east of front edge of the sill, 0.08 meter above the level of sidewalk; $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. C ₁)..... | 1, 351. 076 |
| Osakis, on northwest corner of Second Street and Great Northern Ry., in brickwork of south wall of mill of Osakis Milling Co., 4.55 meters west of east end of building, 0.3 meter west of street line which runs through the mill, 3.8 meters east of main doorway, 1 meter above ground; red metal disk (C. & G. S. b. m. D ₁)..... | 1, 346. 224 |
| Osakis, 2.4 kilometers west of, 3 meters north of Great Northern Ry. track, on east pier (sandstone) supporting overhead highway bridge, 6 meters below highway, 0.6 meter below level of rail, 0.07 meter southwest of northeast corner of pier, at level of ground; bottom of hole in horizontal surface (C. & G. S. b. m. E ₁)..... | 1, 388. 436 |
| Nelson, 1.8 kilometers east of, 22 meters south of Great Northern Ry. track, at grade crossing, at highway line adjoining land owned by A. D. Hanson, 3 meters north of right of way fence and 10 meters east of traveled road, 1 meter above level of rail; 3-inch red-metal cap (C. & G. S. b. m. F ₁).. | 1, 350. 424 |

LAKE CARLOS QUADRANGLE.

[Latitude, 45° 45'-46°; longitude, 95° 15'-95° 30'.]

From Nelson west along Great Northern Ry. to Garfield.

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| Nelson, 60 meters east of station, 24 meters north of track, 9 meters east of center of Nelson Street, at intersection of street line, right of way fence, and southwest corner of land of S. J. Miller, 50 meters southwest of his house, in stone post; top of $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. G ₁).... | 1, 367. 819 |
| Alexandria, 1.8 kilometers east of, at grade crossing, 20 meters south of track, at intersection of west highway line, railway fence, and northeast corner of land of Great Northern Ry. leased by Capt. Schaefer and used as a pasture, on iron post set in hard clay; 3-inch red-metal cap (C. & G. S. b. m. H ₁)..... | 1, 414. 702 |
| Alexandria, about 1 $\frac{1}{4}$ miles east of, in NE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 20, T. 127 N., R. 37 W., on land owned by A. J. Thompson, on wooded land on a ridge, 133 paces south of his house, about 1,600 feet south of Sixth Street extended, 30 meters west of north-south road, near nail in terra-cotta pipe; square hole (Alexandria triang. sta.)..... | 1, 479. 229 |
| Alexandria triangulation station, about 36 meters northeast of, at highway line, 8 meters west of north-south traveled road, in top of terra-cotta pipe filled and surrounded with concrete; top of nail (Alexandria reference mark)..... | 1, 477. 599 |

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| Alexandria, 60 meters west of station, 70 meters east of G Street, in east pier (nearest track) under water tank, 2.7 meters south of rail, 0.35 meter above ground, 0.05 meter southwest of northeast corner of pier; bottom of hole (C. & G. S. b. m. I ₁)..... | Feet. 1, 390. 713 |
| Alexandria, 1 meter west of west line of G Street, 35 meters north of Third Avenue, 2 meters inside of northeast corner of lot of E. G. Erickson, owner of the Alexandria Boat Works, 165 meters south of track, in stone post set in fine gravel; top of $\frac{1}{2}$ -inch copper bolt (C. & G. S. b. m. J ₁).... | 1, 392. 373 |
| Alexandria, in top surface of sandstone sill in front of store of F. E. & Geo. Raiter, on east side of G Street, 24 meters north of north line of Sixth Avenue, 2.3 meters north of south side of building which abuts a yellow brick block, 3 meters south of center of doorway, 0.08 meter from outer edge of sill, 0.07 meter above level of sidewalk; red-metal disk (K ₁).... | 1, 403. 961 |
| Alexandria, in school grounds, 20 meters west of F Street, 38 meters south of Seventh Street, 29 meters east of east side of school building, between the letters U. S. on top of marble post projecting 4 inches above ground, marked by cross and letters "U. S. C. & G. S."; shallow square (the surface is fast being chipped away by school children) (Alexandria magnetic station)..... | 1, 405. 850 |
| Alexandria, about 30 meters west of E Street, 0.18 meter west of southeast corner of foundation wall (red sandstone), on south side of county courthouse, 1.13 meters above ground, 0.8 meter below brickwork, in second course from top; $\frac{1}{2}$ -inch copper bolt (L ₁)..... | 1, 415. 207 |
| Alexandria, in sandstone foundation of county courthouse, 0.38 meter below and 1.7 meters east of b. m. L ₁ ; a deep scratch (C. & G. S. b. m. City).... | 1, 413. 964 |
| NOTE.—The elevation on the city datum was given as 53.28 feet, in this datum, which is about 25 years old. The level of Lake Agnes, north of the city, was taken as zero and the several adjoining and connected lakes are at approximately the same level. | |
| Garfield, 4.5 kilometers east of, 24 meters north of track, at grade crossing, at intersection of east highway line, right of way fence, and southwest corner of land of Peter Johnson, 8 meters east of traveled road, 3.2 meters above level of rail on iron post set in fine gravel and sand; 3-inch red-metal cap (C. & G. S. b. m. M ₁)..... | 1, 388. 374 |

URNESS QUADRANGLE.

[Latitude, 45° 45'–46°; longitude, 95° 30'–95° 45'.]

From Garfield northwest along Great Northern Ry. to Evansville.

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| Garfield, 24 meters south of track, 28 meters west of station, 12 meters west of Main Street prolonged, in northeast corner of lot of Fred Bartel, 15 meters north of his house, in stone post set in hard clay; top of $\frac{1}{2}$ -inch copper bolt (C. & G. S. b. m. N ₁)..... | 1, 422. 353 |
| Brandon, 4.7 kilometers east of, on west pier of overhead highway bridge, 0.2 meter southeast of northwest corner of pier, 2.2 meters south of rail, at level of ground, 0.4 meter below rail and 8 meters below highway, in horizontal surface; bottom of hole (C. & G. S. b. m. O ₁)..... | 1, 411. 893 |
| Brandon, 3 kilometers east of, 3 meters north of main track, 700 meters east of grade crossing, 400 meters west of embankment through a small lake on highest point of flinty granite boulder about 1 meter square and 1.5 meters high; bottom of hole in horizontal surface (C. & G. S. b. m. P ₁).. | 1, 411. 241 |
| Brandon, 2.5 kilometers east of, 20 meters north of track, at grade crossing, at intersection of west highway line, right of way fence, and southeast corner of land of Gunder Kylo, 1.2 meters above level of rail, on iron post set in hard clay; 3-inch red-metal cap (C. & G. S. b. m. Q ₁)..... | 1, 417. 385 |

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|---|----------------------|
| Brandon, 10 meters east of station, 17 meters south of track, at intersection of east line of main street, right of way fence, and northwest corner of lot of Brandon Flouring Mills, 80 meters west of mill, at level of rail, in stone post set in clay; top of $\frac{1}{2}$ -inch copper bolt (C. & G. S. b. m. R ₁)..... | Feet. 1, 387. 019 |
|---|----------------------|

AXEL QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 95° 30'-95° 45'.]

Near Evansville.

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|---|-------------|
| Evansville, in section of town called Johnson's First Addition, 130 meters southwest of station, in northeast corner of public school grounds, at south line of Second Avenue, 35 meters west of Railroad Street, in stone post; top of $\frac{1}{2}$ -inch copper bolt (C. & G. S. b.m. S ₁) | 1, 359. 154 |
| Evansville, 100 meters south of station, 15 meters east of east line of Railroad Street, in north wall (yellow brick) of town hall, 1.5 meters east of northwest corner, 1.8 meters above ground; red-metal disk (C. & G. S. b.m. T ₁)..... | 1, 359. 020 |
| Erdahl (Cork P. O.), on land of T. Tobiasson, of Ashby, at east line of main street, 58 meters south of track, at a point 70 meters west of station, 7 meters east of line of travel, 17 meters northeast of frame store of A. J. Oxelgren, 24 meters south of grain elevator, on iron post; 3-inch red-metal cap (C. & G. S. b. m. U ₁)..... | 1, 265. 371 |
| Evansville, about 2 miles northwest of, 5 telegraph poles west of milepost 161, 1 meter north of Great Northern Ry. right-of-way fence, on side of rocky hill, on iron post; 3-inch red-metal cap (C. & G. S. b. m. M ₂)..... | 1, 368. 281 |
| Melby, about 100 meters west of station platform, 35 meters west of road crossing, on public highway, 8 meters south of Great Northern Ry. track, on iron post; 3-inch red-metal cap (C. & G. S. b. m. N ₂)..... | 1, 277. 150 |

BARRETT QUADRANGLE.

[Latitude, 45° 45'-46°; longitude, 95° 45'-96°.]

Near Elbow Lake.

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| Thorsborg, Sanford Township, in NW. $\frac{1}{4}$ sec. 13, 110 meters north and 60 meters west of railroad station, at southwest corner of pasture belonging to Henry Lajord, at northeast corner of crossroads, 10 meters east and 5 meters north of line of travel, on iron post; 3-inch red-metal cap (C. & G. S. b. m. V ₁)..... | 1, 203. 584 |
| Elbow Lake, 4 kilometers east of station on Great Northern Ry., 1.8 kilometers east of crossing of Minneapolis, St. Paul & Sault Ste. Marie Ry., 150 meters west of bridge over a slough, 300 meters east of northwest corner of cultivated field belonging to Harold Thorsen, of Elbow Lake, at right of way fence, 20 meters south of track, leaded into center of top surface of block of red Kasota sandstone 0.5 meter square and 0.7 meter long, set flush with ground; copper bolt marked "U. S. B. M." (C. & G. S. b. m. W ₁)..... | 1, 221. 720 |
| Elbow Lake, in north end of south doorsill (sandstone) of First National Bank building, 1.8 meters north of south side of building, 0.1 meter from east or front edge of sill, 0.08 meter south of brickwork, 0.4 meter above sidewalk, 0.5 meter north of center of doorway; red-metal disk (C. & G. S. b. m. X ₁)..... | 1, 212. 506 |
| Elbow Lake at southeast corner of Bank of Elbow Lake building, on back or west edge of cornerstone (sandstone) under stone porch pillar 13 millimeters square, in broad sloping bevel, 0.06 meter north of southwest corner of stone, 0.7 meter west of west line of main street, 0.4 meter above sidewalk; bottom of a horizontal niche (C. & G. S. b. m. Y ₁)..... | 1, 212. 104 |

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|---|----------------------|
| Elbow Lake, 1.3 kilometers south of, 3.2 kilometers east of station Elbow Lake on Great Northern Ry., 22 meters southwest of crossing of Great Northern and Minneapolis, St. Paul & Sault Ste. Marie Rys., 20 meters south of track of former, 14 meters west of that of latter, 2 meters south of corner of right of way fences; in northeast corner of pasture belonging to John Warwick; 3-inch red-metal cap (C. & G. S. b. m. Z ₁) | Feet. 1, 202. 052 |
| Elbow Lake, 2 miles east and 1½ miles north of town, 10 meters west of north-south traveled road, 3.5 kilometers north of Great Northern Ry., on grassy land on a hill, on east side of sec. 3, T. 129, R. 42, on land owned by Niels Olson, who lives ¼ mile north on northeast corner of section, west of station point, in terra-cotta pipe; square hole (C. & G. S. b. m. Elbow triang. sta.) | 1, 278. 432 |
| Elbow Lake, 3 kilometers west of town, 45 meters south of station on Great Northern Ry., in northeast corner of meadow belonging to Charles Dahl, at highway line, 15 meters south of traveled road where it turns north to cross the track; bottom of hole (C. & G. S. b. m. A ₂) | 1, 190. 942 |

WENDELL QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 96°-96° 15'.]

Near Hereford.

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| Hereford, 3.5 kilometers east of, 1.8 kilometers south of town of Wendell, 25 meters north of Great Northern Ry. track, at junction of right of way fence, west highway line, and southeast corner of meadow belonging to Arthur Smith, on iron post; 3-inch red-metal cap (C. & G. S. b. m. B ₂) .. | 1, 128. 712 |
| Hereford, 4 kilometers west of, 15 meters south of Great Northern Ry. track, 780 meters west of grade crossing, at junction of right of way line, west side of private roadway crossing track, and northwest corner of cultivated field belonging to John Watry; 3-inch red-metal cap (C. & G. S. b. m. C ₂) .. | 1, 028. 695 |

CAMPBELL QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 96° 15'-96° 30'.]

From Tintah west along Great Northern Ry. to Childs.

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|---|-------------|
| Tintah, 65 meters south and 75 meters east of railroad station, 70 meters southeast of frame church building, 75 meters south of Hotel Tintah, at east line of alley, at northwest corner of lot of Peter Putnam, in stone post; top of ½-inch copper bolt (C. & G. S. b. m. D ₂) | 996. 501 |
| Tintah, 125 meters north and 40 meters east of station, in south wall of engine house of Imperial Elevator Co., 2 meters west of southeast corner of building, 2.7 meters east of doorway, 1.2 meters above ground, in yellow brick; ½-inch copper bolt (C. & G. S. b. m. E ₂) | 1, 000. 575 |
| Tintah, 3.2 kilometers north of, 18 meters east of track, 0.5 kilometer south of crossing of Soo Line, at east highway line and northwest corner of pasture belonging to John Wilkie, in stone post; top of ½-inch copper bolt (C. & G. S. b. m. F ₂) | 990. 776 |
| Yarmouth, 0.8 kilometer west of, 4.5 kilometers south of town of Campbell, 38 meters south of track, at south highway line and northwest corner of lot belonging to N. W. Ware, 12 meters south of line of travel, 8 meters west of private road, 22 meters northwest of house of Mr. Ware, in row of willow trees, 80 meters east of running stream, in stone post; top of ½-inch copper bolt (C. & G. S. b. m. G ₂) | 985. 319 |
| Tenney, 2.8 kilometers north of town, 25 meters north of track, at grade crossing, at junction of west highway line, right of way line, and southeast corner of field belonging to F. W. Hungerford, 7 meters west of line of travel; 3-inch red-metal cap (C. & G. S. b. m. H ₂) | 981. 173 |

WAHPETON QUADRANGLE.

[Latitude, 46°-46° 30'; longitude, 96° 30'-97°.]

Near Childs.

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|---|-------------------|
| Childs, 1.7 kilometers east of Bois de Sioux River, which is the State line between Minnesota and North Dakota, 90 meters south of Great Northern Ry. track, 10 meters east of line of travel, at east highway line, 3 meters north of southwest corner of lot belonging to D. D. Waite, in stone post; top of $\frac{1}{2}$ -inch copper bolt (C. & G. S. b. m. I ₂) | Feet. 974. 683 |
| Fairmount, N. Dak., near, in Minnesota, a U. S. Geological Survey bench mark described thus: "T. 130 N., R. 47 W., sec. 3, northeast corner of; iron post stamped '971.'" The post was found as described, at northwest corner of crossroads (C. & G. S. b. m. 971 W.) | 970. 113 |
| Fairmount, N. Dak., near, in Minnesota, a U. S. Geological Survey bench mark, described thus: "T. 131 N., R. 47 N., sec. 10, southeast corner of, northwest corner of crossroads; iron post stamped '969'" (969 W.)... | 968. 876 |
| Childs, 2.5 miles north of, almost at quarter corner on west side of sec. 1, T. 130 N., R. 47 W., on land at west edge of wheat field rented by M. E. Foss living 0.75 mile east-southeast, in terra-cotta pipe, near nail; square hole (Foss triang. sta.) | 973. 774 |
| Childs, near, at southeast corner of NE. $\frac{1}{4}$ sec. 2, on land owned by Ed. Joy, 20 meters west of Foss triangulation station, on opposite side of highway, in terra-cotta pipe, near nail; square hole (Foss reference mark) | 974. 096 |
| Childs, 8.5 kilometers north and 1.6 kilometers west of, at northeast corner of sec. 27, T. 131 N., R. 47 W., at southwest corner of crossroads, 2 meters south of south highway line, on west highway line; square concrete post (C. & G. S. b. m. J ₂) | 969. 643 |

WHITE ROCK QUADRANGLE.

[Latitude, 45° 45'-46°; longitude, 96° 30'-96° 45'.]

From White Rock south along Chicago, Milwaukee & St. Paul Ry. to Wheaton.

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| White Rock, S. Dak., 1.5 kilometers south of, in Minnesota, on south side of sec. 10, T. 128 N., R. 47 W., near southeast corner of section, 19 meters east of railroad track, at right of way fence, north highway line, southwest corner of pasture, 1.1 meters above level of rails; 3-inch red-metal cap on iron post (C. & G. S. b. m. K ₂) | 990. 110 |
| White Rock, S. Dak., 2.6 kilometers south of, in Minnesota, near center of SE. $\frac{1}{4}$ sec. 15, T. 128 N., R. 47 W., 14 meters east of track, 1.2 meters below level of rail, 1.2 kilometers south of grade crossing, in granite boulder 0.9 meter square and 0.5 meter deep, in horizontal surface; square hole (C. & G. S. b. m. L ₂) | 1, 007. 459 |
| Wheaton, 9 kilometers north of, near center of south side of SW. $\frac{1}{4}$ sec. 23, T. 128 N., R. 47 W., 20 meters east of railroad track, 14 meters north of traveled road, at junction of right of way fence, highway line, and southwest corner of cultivated field; square concrete post (C. & G. S. b. m. M ₂). 1, 035. 805 | 1, 035. 805 |

WHEATON QUADRANGLE.

[Latitude, 45° 45'-46°; longitude, 96° 15'-96° 30'.]

Near Wheaton.

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| Wheaton, at northwest corner of Erickson, Hellekson & Co.'s hardware store, at corner of Broadway and Minnesota Street, in bevel of top edge of east face of corner stone, 0.04 meter south of front face of stone, 0.4 meter above sidewalk, 0.5 meter east of west side of building; bottom of hole in horizontal cut (C. & G. S. b. m. N ₂) | 1, 019. 876 |
|--|-------------|

| | Feet. |
|---|-----------|
| Wheaton, at extreme southeast corner of Bank of Wheaton, on north side of Broadway, 1 block east from Minnesota Street, on top of lower granite step, 0.02 meter northwest of southeast corner, 0.15 meter above sidewalk; square in outline (City)..... | 1,019.561 |
| Wheaton, northeast corner of Broadway and Minnesota Street, on sandstone doorsill of store owned by Mr. Christianson, at east end of sill, 0.15 meter from front edge, 0.4 meter above sidewalk; red metal disk (C. & G. S. b. m. O ₂)..... | 1,020.178 |
| Wheaton, 5 kilometers south of, in west side of SW. $\frac{1}{4}$ sec. 33, T. 127 N., R. 46 W., 25 meters west of Chicago, Milwaukee & St. Paul Ry. track, at grade crossing, 9 meters southeast of line of travel, at junction of right of way fence, highway line, and northwest corner of waste lot, 4 meters north of large stone heap; red-metal disk (C. & G. S. b. m. P ₂).. | 1,023.850 |

GRACEVILLE QUADRANGLE.

[Latitude, 45° 30'–45° 45'; longitude, 96° 15'–96° 30'.]

From Dumont south along Chicago, Milwaukee & St. Paul Ry. to point 5 miles south of Graceville.

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| Dumont, 1.6 kilometers north of, 15 meters east of the track of Chicago, Milwaukee & St. Paul Ry., 9 meters north of traveled road; at highway line, right-of-way fence, and southwest corner of land of Mr. Haas, near the southeast corner of sec. 10, T. 126 N., R. 47 W.; 3-inch red-metal cap on iron post (C. & G. S. b. m. Q ₂)..... | 1,040.090 |
| Dumont, on Main Street, 66 meters east of Chicago, Milwaukee & St. Paul Ry. track and 20 meters north of the station, in west wall of yellow brick store belonging to K. Kwurm, 0.55 meter north of southwest corner, 1.3 meters above ground; red metal disk (C. & G. S. b. m. R ₂).... | 1,046.209 |
| Dumont, 24 meters east of track, 15 meters south of station, 1.8 meters east of adjacent rail in side track, on upper surface of foundation (sandstone) at northwest corner of National Elevator Co.'s grain elevator, 0.2 meter above ground, 6 centimeters east of west edge and 10 centimeters south of north edge of stone; bottom of hole in horizontal surface (C. & G. S. b. m. S ₂)..... | 1,041.019 |
| Dumont, 4.8 kilometers south of, 17 meters west of track, 9 meters south and 8 meters east of line of travel, at intersection of highway line and right-of-way fence, near northeast corner of sec. 3, T. 125 N., R. 46 W., adjoining land of John Donahue; 3-inch red-metal cap (C. & G. S. b. m. T ₂)..... | 1,051.343 |
| Collis, 11 meters east of track, on granite foundation of grain elevator of Miller Elevator Co., 0.31 meter north of extreme southwest corner and 0.03 meter east of west edge of stone, 0.18 meter above ground, 0.15 meter north of southwest corner of framing and 0.10 meter below it, "U. S. B. M." cut on adjacent wood with chisel; bottom of hole in horizontal surface (C. & G. S. b. m. U ₂)..... | 1,065.135 |
| Collis, 2 kilometers south of, near northwest corner of sec. 23, T. 125 N., R. 46 W., 14 meters east of railroad track, 8 meters south of line of travel, at intersection of highway line and right-of-way fence, on block of granite 0.4 meter by 0.6 meter by 0.7 meter set flush with ground, 0.15 meter east of west side of stone and 0.08 meter south of north side; smooth bottom of round cut (C. & G. S. b. m. V ₂)..... | 1,070.162 |

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| Graceville, 5.2 kilometers north of, near northeast corner of sec. 27, T. 125 N., R. 46 W., 12 meters west of track, 9 meters south and 8 meters east of lines of travel, at intersection of highway lines and right-of-way fence; on block of granite 0.5 meter in size; smooth bottom of round cut (C. & G. S. b. m. W ₂) | Feet. 1,079.637 |
| Graceville, 3.6 kilometers north of, near northeast corner of sec. 34, T. 125 N., R. 46 W., 15 meters west of track, 10 meters south of line of travel, at right of way fence and intersecting highway line, adjoining land of William Rice; 3-inch red-metal cap (C. & G. S. b. m. X ₂) | 1,100.349 |
| Graceville, 12 meters west of center of Second Street, midway between St. Peter and St. Paul streets, near center of east side of lot 10, in northeast corner of public-school grounds, 0.9 meter south of north fence and 0.5 meter west of east fence, in stone post; top of $\frac{1}{2}$ -inch copper bolt (C. & G. S. b. m. Y ₂) | 1,110.444 |
| Graceville, at southeast corner of Fourth Street and Studdart Avenue, on top surface of sandstone water table of Brennan Brothers' store, 2.4 meters west of center of doorway, 0.6 meter east of west wall, 9 centimeters south of front edge of stone, 0.4 meter above sidewalk; cross in outline (City) | 1,111.543 |
| Graceville, at entrance near southeast corner of Graceville House, belonging to A. E. Heymann, on northeast corner of Third Street and Studdart Avenue, in center of sandstone doorsill, 0.2 meter north of front edge of sill, 0.1 meter above sidewalk and 1.7 meters west of southeast corner of building; red-metal disk (C. & G. S. b. m. Z ₂) | 1,111.415 |
| Graceville, 120 meters south of station, 20 meters west of track, on grain elevator of Monarch Elevator Co., 0.4 meter south of extreme northeast corner of building, on stone 7 centimeters above ground, 6 centimeters west of east edge of stone, "U. S. B. M." chiseled in adjoining wood; bottom of hole in horizontal surface (C. & G. S. b. m. A ₃) | 1,107.763 |
| Graceville, 1.6 kilometers south of, near southeast corner of sec. 9, T. 124 N., R. 46 W., 8 meters east of railroad track, at grade crossing, 10 meters north of line of travel, 11 meters west of right-of-way fence, at highway line, 0.2 meter below level of rail; top of $\frac{1}{2}$ -inch copper bolt in stone post (C. & G. S. b. m. B ₂) | 1,110.671 |
| Graceville, 6.2 kilometers south of, in SW. $\frac{1}{4}$ sec. 28, T. 124 N., R. 46 W., 15 meters east of track, at right-of-way fence, 325 meters west of house of F. R. Rothwell and 9 meters north of private road leading to it; 3-inch red-metal cap (C. & G. S. b. m. C ₂) | 1,142.160 |

ORTONVILLE QUADRANGLE.

[Latitude, 45° 15'-45° 30'; longitude, 96° 15'-96° 30'.]

From point 5 miles south of Graceville south along Chicago, Milwaukee & St. Paul Ry. to Ortonville.

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|---|-----------|
| Graceville, 8 kilometers south of, in NW. $\frac{1}{4}$ sec. 4, T. 123 N., R. 46 W., 14 meters east of railroad track, at grade crossing, 6 meters west and 13 meters south of lines of travel, adjoining land of L. E. Daly and 345 meters south of his house; square concrete post (C. & G. S. b. m. D ₂) | 1,156.930 |
| Clinton, 3 kilometers north of, in SW. $\frac{1}{4}$ sec. 4, T. 123 N., R. 46 W., 18 meters west of track, at grade crossing, 11 meters north of line of travel, at junction of highway line, right-of-way fence and southeast corner of field of Joseph Rothwell; 3-inch red-metal cap on iron post (C. & G. S. b. m. E ₂) | 1,184.112 |

| | |
|---|----------------------|
| Clinton, on south side of main street, 50 meters east of main railroad track, under city water tank, in bevel of upper and west edge of north pier of west pair, 9 centimeters south of north edge and 2 centimeters east of west edge of stone, 25 centimeters above ground; bottom of hole in horizontal cut (C. & G. S. b. m. F ₁)..... | Feet. 1, 161. 507 |
| Clinton, on north side of main street, 80 meters east of main railroad track, in front sandstone door sill of Erickson Building, 9 centimeters north of front edge of sill, 0.75 meter east of center of doorway, 0.15 meter above sidewalk; red metal disk (C. & G. S. b. m. G ₁)..... | 1, 161. 848 |
| Clinton, 2 kilometers south of, in SE. $\frac{1}{4}$ sec. 21, T. 123 N., R. 46 W., 17 meters east of track, at grade crossing, 8 meters north of line of travel, at intersection of highway line, right of way fence, and southwest corner of cultivated field belonging to M. Vigness; 3-inch red-metal cap on iron post (C. & G. S. b. m. H ₁)..... | 1, 146. 339 |
| Ortonville, 7.5 kilometers north of, in SE. $\frac{1}{4}$ sec. 16, T. 122 N., R. 46 W., 17 meters west of track, at grade crossing, 7 meters north of line of travel, at intersection of highway line, right of way fence, and southeast corner of cultivated field belonging to Claus Carlson; 3-inch red-metal cap on post (C. & G. S. b. m. I ₁)..... | 1, 153. 793 |
| Ortonville, 4 kilometers north of, near the center of the north side of sec. 33, T. 122 N., R. 46 W., 7.4 meters west of track, 240 meters south of grade crossing, on highest point of granite boulder 1.3 meters by 1.8 meters by 0.5 meter; smooth bottom of round cut (C. & G. S. b. m. J ₁)..... | 1, 109. 585 |
| Ortonville, 2.6 kilometers north of courthouse, at northwest corner of NE. $\frac{1}{4}$ sec. 4, T. 121 N., R. 46 W., 20 meters east of track, at grade crossing, at crossroads, 8 meters east and 6 meters south of lines of travel; 3-inch red-metal cap (C. & G. S. b. m. K ₁)..... | 1, 103. 072 |
| Ortonville, on granite terrace wall of county courthouse, 64 meters south of main entrance, in top of southwest corner, 1.1 meters east of front edge of wall, 0.06 meter north of south edge, 1.55 meters above ground; smooth bottom of round cut (C. & G. S. b. m. L ₁)..... | 1, 021. 655 |
| Ortonville, established by Corps of Engineers, U. S. Army, in their survey of Bigstone Lake and described thus: "A boat spike in a horizontal blaze in the root of an oak tree 55 feet southwest of the southwest corner-stone of block 1." (U. S. C. E. 1)..... | 978. 413 |
| Ortonville, established by Corps of Engineers, U. S. Army, and described thus: "The center of the top of a square granite cut stone set at the northwest corner of block 1, the stone is on the lake beach at the foot of the bank." A copper bolt was cemented in a drill hole in center of post and used as bench mark in 1904. (U. S. C. E. 2)..... | 968. 433 |
| Ortonville, established by Corps of Engineers, U. S. Army, and described thus: "The monument is on the fence line along the north side of Madison Avenue, about 200 feet east from the railway tracks and about 140 feet southwest from the center of the intersection of Madison Avenue and Front or First Street, it is the extreme high-water lake level." In 1904 it was marked in the same manner as U. S. C. E. 2. (U. S. C. E. 3)..... | 970. 949 |
| From Ortonville along Minnesota River to point near Odessa. | |
| Ortonville, 140 feet southwest of intersection of Madison Avenue and Front or First Street, on fence line on north side of Madison Avenue; copper plug in granite monument..... | 972. 97 |
| Ortonville, 40 feet northwest by 180 feet southwest of northwest end of station, on down-river side of road, 2 feet from fence; brass plug in concrete and iron pipe (U. S. C. E. b. m. 528): | |
| Brass plug..... | 980. 66 |
| Cap on pipe..... | 984. 49 |

| | |
|--|------------------|
| Big Stone City, S. Dak., at foot of bluff near intersection of first road below Big Stone Lake (Ortonville-Big Stone City road) with north-south road on quarter-section line; brass plug in concrete and iron pipe (U. S. C. E. b. m. 516): | |
| Brass plug..... | Feet. 976. 39 |
| Cap on pipe..... | 980. 20 |
| Ortonville, 5 miles southeast of, on knoll east of road between secs. 26 and 27, 2 feet from fence, 330 feet north-northeast from center of highway bridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 520): | |
| Brass plug..... | 966. 57 |
| Cap on pipe..... | 970. 41 |
| Odessa, 0.5 mile southwest of, 350 feet south by 100 feet west from center of bridge over Minnesota River, 3 feet north of fence; brass plug in concrete and iron pipe (U. S. C. E. b. m. 524): | |
| Brass plug..... | 959. 83 |
| Cap on pipe..... | 963. 62 |
| Odessa, bridge southwest of, in left bank downstream pier, on head of outside bolt (U. S. C. E. b. m.): | |
| | 959. 09 |

MADISON QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 96°-96° 15'.]

From point near Odessa along Minnesota River to point near Appleton.

| | |
|--|---------|
| Odessa, 3.5 miles southeast of, on line between Tps. 120 and 121, 1,200 feet east of bridge over Minnesota River, 18 feet southwest from granite monument on corner of secs. 34 and 35, T. 121 N., R. 45 W.; brass plug in concrete and iron pipe (U. S. C. E. b. m. 549): | |
| Brass plug..... | 950. 67 |
| Cap on pipe..... | 954. 54 |
| Marsh Lake, 3.5 miles southwest of Correll, center of sec. 17, T. 120 N., R. 44 W., top of left bank downstream pier of bridge over Minnesota River, on bolt (U. S. C. E. b. m. 11): | |
| | 944. 46 |
| T. 120 N., R. 44 W., about 700 feet north of southeast corner of sec. 18, 84 feet north-northeast from J. P. Sorenson's farmhouse on section line between secs. 17 and 18; brass plug in concrete and iron pipe (U. S. C. E. b. m. 535): | |
| Brass plug..... | 947. 10 |
| Cap on pipe..... | 950. 95 |
| Correll, in northeast corner of school yard, 100 feet northeast of northeast corner of building, 5 feet south of fence line along north side of school yard; brass plug in concrete and iron pipe (U. S. C. E. b. m. 536): | |
| Brass plug..... | 979. 41 |
| Cap on pipe..... | 983. 26 |
| Appleton, 2.8 miles southwest of, center of sec. 20, T. 120 N., R. 43 W., spike in northwest corner of bridge over Pomme de Terre River (U. S. C. E. b. m. 13): | |
| | 959. 64 |
| Appleton, 2.8 miles southwest of, 550 feet southwest of west end of highway bridge over Pomme de Terre River, 120 feet south of road, 3 feet inside fence line; brass plug in concrete and iron pipe (U. S. C. E. b. m. 552): | |
| Brass plug..... | 952. 56 |
| Cap on pipe..... | 956. 37 |

| | |
|---|-----------------|
| Appleton, 4.5 miles southwest of, elevation of tie in Great Northern Ry. bridge over Minnesota River..... | Feet. 948.07 |
| Appleton, 3.5 miles southwest of, left bank downstream corner of steel highway bridge over Minnesota River, on bolt in base plate (U. S. C. E. b. m. 15)..... | 940.96 |
| T. 120 N., R. 43 W., sec. 34, 100 feet southeast of southeast corner of W. V. Lathrope farmhouse; brass plug in concrete and iron pipe (U. S. C. E. b. m. 562): | |
| Brass plug..... | 949.83 |
| Cap on pipe..... | 953.69 |

MILAN QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 95° 45'-96°.]

From point near Appleton along Minnesota River to point near Watson.

| | |
|---|--------|
| Milan, 3.5 miles southwest of, on range line between Ra. 42 and 43, about 1,500 feet north of southwest corner of sec. 19, T. 119 N., R. 42 W., on left bank downstream corner of highway bridge across neck of Lac Qui Parle, on anchor bolt through Z bar roller guard (U. S. C. E. b. m. 16).. | 940.23 |
| Lac Qui Parle, 400 feet east from northeast end of highway bridge across neck of, 6 feet from fence line to south, south side of road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 545): | |
| Brass plug..... | 945.12 |
| Cap on pipe..... | 948.90 |
| Watson Sag ditch, 1,375 feet north-northeast from small concrete bridge over, 100 feet northeast of turn in road, 600 feet east of west boundary of sec. 3, near foot of bluff; brass plug in concrete and iron pipe (U. S. C. E. b. m. 543): | |
| Brass plug..... | 950.60 |
| Cap on pipe..... | 954.51 |
| T. 118 N., R. 42 W., near quarter line of sec. 13, 150 feet east-northeast of center of first highway bridge over Minnesota River below Lac Qui Parle, 30 feet north of center of road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 530): | |
| Brass plug..... | 937.02 |
| Cap on pipe..... | 940.81 |
| Watson, near, on left bank downstream pier of first highway bridge below Lac Qui Parle, on north bolt head of cover plate (U. S. C. E. b. m. 18).. | 943.10 |

BOYD QUADRANGLE.

[Latitude, 44° 45'-45°; longitude, 95° 45'-96°.]

From point near Watson along Minnesota River to point near Montevideo.

| | |
|---|----------|
| Watson, 1.8 miles southwest of, on line between secs. 29 and 32, T. 118 N., R. 41 W., on left bank downstream corner of wooden highway bridge over Minnesota River, on threads of outer lower tension rod (U. S. C. E. b. m. 19)..... | 934.46 |
| Watson, 1.8 miles southwest of, 645 feet west-southwest (azimuth about 75°) from southwest end of above-described bridge over Minnesota River, 200 feet south of road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 554): | |
| Brass plug..... | 960.49 |
| Cap on pipe..... | 964.33 |
| Watson Creamery, 40 feet southwest of southwest corner of; brass plug in concrete and iron pipe (U. S. C. E. b. m. 553): | |
| Brass plug..... | 1,012.01 |
| Cap on pipe..... | 1,015.84 |

| | |
|--|---------|
| Montevideo, 5 miles above, in pasture, 3 feet southeast of fence on south-east side of road, 25 feet from center of road, in NW. $\frac{1}{4}$ sec. 9, T. 117 N., R. 41 W., 300 feet northeast of east end of steel highway bridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 541): | |
| Brass plug..... | 928. 97 |
| Cap on pipe..... | 932. 75 |
| Montevideo, 5 miles above, left bank downstream pier of steel highway bridge above described, on southeast bolt head in cover plate (U. S. C. E. b. m. 21)..... | 931. 31 |

MONTEVIDEO QUADRANGLE.

[Latitude, 44° 45'-45"; longitude, 95° 30'-35° 45'.]

From point near Montevideo along Minnesota River to Minnesota Falls.

| | |
|--|---------|
| Montevideo, at mill dam in; on bolt head in cover plate on upstream right-bank pier of highway bridge over Chippewa River (U. S. C. E. b. m. 23)... | 934. 79 |
| Montevideo, on corner of North First Street and Sherman Avenue; cross on hydrant flange at water trough (U. S. C. E. b. m. 23)..... | 955. 84 |
| Montevideo, 1.2 miles south-southwest of, 20 feet west of center of road, 1.5 feet west of fence line, 420 feet south of highway bridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 555): | |
| Brass plug..... | 933. 11 |
| Cap on pipe..... | 936. 97 |
| Chippewa River, below mouth of, left bank downstream chord Lo U of first bridge over Minnesota River, on upper rivet of middle row in cover plate (U. S. C. E. b. m. 25)..... | 929. 97 |
| Myers, 400 feet east of east end of highway bridge over Minnesota River, 20 feet north of road, opposite Mrs. B. Nelson's residence; brass plug in concrete and iron pipe (U. S. C. E. b. m. 565): | |
| Brass plug..... | 926. 07 |
| Cap on pipe..... | 929. 89 |
| Myers, in front-yard line of Lauris Larson's home; spike in root of 16-inch box-elder tree (U. S. C. E. b. m. 27)..... | 925. 92 |
| Granite Falls, 1 mile northwest of, upstream side of right abutment of Great Northern Ry. bridge over Minnesota River, on north rivet of base plate (U. S. C. E. b. m. 28)..... | 920. 35 |
| Granite Falls, 3.5 miles northwest of, 100 feet west of east boundary fence line of John J. Mooney's farm, 300 feet south of river at bend, on right bank of Minnesota River in sec. 19, T. 116 N., R. 39 W., 60 feet north of river road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 559): | |
| Brass plug..... | 917. 22 |
| Cap on pipe..... | 921. 04 |
| Granite Falls, 50 feet east of left bank of river, 66 feet northeast of east end of footbridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 540): | |
| Brass plug..... | 892. 59 |
| Cap on pipe..... | 896. 41 |
| Minnesota Falls, 16 feet northeast of east end of head gate at dam; brass plug in concrete and iron pipe (U. S. C. E. b. m. 525): | |
| Brass plug..... | 886. 41 |
| Cap on pipe..... | 890. 32 |

ECHO QUADRANGLE.

[Latitude, 44° 30'–44° 45'; longitude, 95° 15'–95° 30'.]

From Minnesota Falls along Minnesota River to point between Sacred Heart and Reville.

| | |
|---|-----------------|
| Granite Falls, 4.5 miles southeast of, 900 feet west of H. W. Brasch's house, near road fence at Camp No. 10; head of spike in root of 20-inch elm tree (U. S. C. E. b. m. 29)..... | Feet. 878.54 |
| Hawk Creek, 1,500 feet north of mouth of, 1,000 feet north of Minnesota River, 150 feet northwest of northwest corner of red barn, 200 feet southwest of southwest corner of gray farmhouse, 20 feet south of road entering farmyard; brass plug in concrete and iron pipe (U. S. C. E. b. m. 607): | |
| Brass plug..... | 885.16 |
| Cap on pipe..... | 889.04 |
| T. 114 N., R. 37 W., in NE. $\frac{1}{4}$ sec. 7, 360 feet south of center of highway bridge over Minnesota River south of Sacred Heart, 40 feet west of center of road, 6 feet from granite outcrop; brass plug in concrete and iron pipe (U. S. C. E. b. m. 561): | |
| Brass plug..... | 865.86 |
| Cap on pipe..... | 869.75 |
| T. 114 N., R. 37 W., in NE. $\frac{1}{4}$ sec. 7, left bank downstream pier of above-described highway bridge on top of anchor bolt (U. S. C. E. b. m. 30)... | 870.59 |
| T. 114 N., R. 37 W., in NW. $\frac{1}{4}$ sec. 22, 8 feet inside of fence on northeast side of road, 150 feet north-northeast from left end of bridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 558): | |
| Brass plug..... | 858.96 |
| Cap on pipe..... | 862.76 |
| T. 114 N., R. 37 W., in NW. $\frac{1}{4}$ sec. 22, left bank downstream pier of above-described highway bridge, top of anchor bolt (U. S. C. E. b. m. 31)..... | 964.60 |

REDWOOD FALLS QUADRANGLE.

[Latitude, 44° 30'–44° 45'; longitude, 95°–95° 15'.]

From point between Sacred Heart and Reville along Minnesota River to point near Beaver Creek.

| | |
|--|--------|
| T. 114 N., R. 36 W., in NE. $\frac{1}{4}$ sec. 30, 210 feet north-northwest by road from bridge over Minnesota River north of Delhi, 15 feet west of road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 571): | |
| Brass plug..... | 848.15 |
| Cap on pipe..... | 852.07 |
| T. 114 N., R. 36 W., in NE. $\frac{1}{4}$ sec. 30, right bank downstream corner of bridge above described, on top of hexagonal nut at end of outer tension rod of Lo Li (U. S. C. E. b. m. 32)..... | 853.09 |
| T. 113 N., R. 36 W., on east boundary of sec. 4, on left bank downstream pier of bridge over Minnesota River, on top of extreme left-hand downstream rivet in base plate of bridge shoe (U. S. C. E. b. m. 33)..... | 849.32 |
| T. 113 N., R. 36 W., in NW. $\frac{1}{4}$ sec. 3, 60 feet southwest of Ed. Gaffney's farmhouse, on road along base of bluff north side of valley; brass plug in concrete and iron pipe (U. S. C. E. b. m. 546): | |
| Brass plug..... | 889.94 |
| Cap on pipe..... | 893.78 |
| T. 113 N., R. 36 W., in sec. 12, 200 yards west of Frank Smith's farmhouse, on road at foot of bluff on north side of valley, 3 feet inside fence, north side of road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 593): | |
| Brass plug..... | 873.95 |
| Cap on pipe..... | 877.78 |

North Redwood, 510 feet northwest of highway bridge over Redwood River, 40 feet west of road, near granite outcrop; brass plug in concrete and iron pipe (U. S. C. E. b. m. 547):

Brass plug..... 85.2
Cap on pipe..... 85.5

North Redwood, 0.5 mile north of, left bank upstream abutment of bridge over Minnesota River, on top of inner anchor bolt (U. S. C. E. b. m. 34).. 84.5

Beaver Creek valley, right side of, 300 feet southwest of square house near old railroad embankment; nail in root of 2-forked 12-inch box-elder tree. 84.4

MORTON QUADRANGLE.

[Latitude, 44° 30'-44° 45'; longitude, 94° 45'-95°.]

From point near Beaver Creek along Minnesota River to point near Franklin.

Morton, near, 300 feet southeast of southeast corner of Morton High School building; brass plug in concrete and iron pipe (U. S. C. E. b. m. 583):

Brass plug..... 855. 01
Cap on pipe..... 858. 92

Morton, left bank downstream bridge seat of Minneapolis & St. Louis R. R. bridge over Minnesota River, on top of inner anchor bolt..... 838. 78

Morton, at station; base of rail..... 842. 38

T. 113 N., R. 34 W., in SW. $\frac{1}{4}$ sec. 33, 550 feet northwest of highway bridge over Birch Cooley Creek, north side of road, 10 feet inside of fence line; brass plug in concrete and iron pipe (U. S. C. E. b. m. 594):

Brass plug..... 840. 17
Cap on pipe..... 844. 05

Franklin, 1 mile south-southeast of, on easterly side of road, 3 feet inside of fence, 300 feet northeast of center of highway bridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 599):

Brass plug..... 831. 91
Cap on pipe..... 835. 76

Franklin, 1 mile south-southeast of, left bank downstream bridge seat of bridge over Minnesota River, on top of anchor bolt (U. S. C. E. b. m. 36). 826. 61

MORGAN QUADRANGLE.

[Latitude, 44° 15'-44° 30'; longitude, 94° 45'-95°.]

From point near Franklin along Minnesota River to point 0.5 miles southeast of Franklin.

T. 112 N., R. 33 W., 100 feet west of line between secs. 20 and 21, at fork in road, on south side of road, at foot of bluffs; brass plug in concrete and iron pipe (U. S. C. E. b. m. 602):

Brass plug..... 855. 11
Cap on pipe..... 858. 98

T. 112 N., R. 33 W., in NE. $\frac{1}{4}$ sec. 34, 120 feet southeast of Solomon Peterson's farmhouse, on north side of road at foot of bluff; brass plug in concrete and iron pipe (U. S. C. E. b. m. 548):

Brass plug..... 848. 50
Cap on pipe..... 852. 39

SLEEPY EYE QUADRANGLE.

[Latitude, 44° 15'-44° 30'; longitude, 94° 30'-94° 45'.]

From point 6.5 miles southeast of Franklin along Minnesota River to West Newton.

| | |
|---|--------|
| C. 111 N., R. 32 W., 1,600 feet north of southeast corner of sec. 6, at fork of roads, near signboard "Franklin 11 mi. New Ulm 16 mi. Sleepy Eye 13 mi. Fairfax 7 mi."; brass plug in concrete and iron pipe (U. S. C. E. b. m. 526): | |
| Brass plug..... | 827.56 |
| Cap on pipe..... | 831.39 |
| Fort Ridgely, 1.25 miles south-southeast of, in SE. $\frac{1}{4}$ sec. 7, T. 111 N., R. 32 W., on upstream end center pier of bridge over Minnesota River, on top of anchor bolt of bridge seat (U. S. C. E. b. m. 37)..... | |
| | 817.13 |
| T. 111 N., R. 32 W., 12 feet east by 30 feet south of quarter corner between secs. 15 and 16, on east side of road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 620): | |
| Brass plug..... | 819.00 |
| Cap on pipe..... | 822.81 |
| T. 111 N., R. 32 W., in NW. $\frac{1}{4}$ sec. 22, left bank downstream bridge seat of bridge over Minnesota River, known locally as "Hendemann Bridge," on top of outer anchor bolt (U. S. C. E. b. m. 38)..... | |
| | 811.93 |
| T. 111 N., R. 31 W., SW. $\frac{1}{4}$ sec. 29, 150 feet southeast of William Palmer's farmhouse, on north side of road; brass plug in concrete and iron pipe (U. S. C. E. b. m. 542): | |
| Brass plug..... | 815.80 |
| Cap on pipe..... | 819.63 |

NEW ULM QUADRANGLE.

[Latitude, 44° 15'-44° 30'; longitude, 94° 15'-94° 30'.]

From West Newton along Minnesota River to point near Courtland.

| | |
|--|--------|
| T. 110 N., R. 31 W., in SW. $\frac{1}{4}$ sec. 1, 165 feet north by 12 feet east of center of bridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 617): | |
| Brass plug..... | 807.82 |
| Cap on pipe..... | 811.64 |
| T. 110 N., R. 31 W., in SW. $\frac{1}{4}$ sec. 1, upstream left bank bridge seat of bridge over Minnesota River above described, on anchor bolt, in line with truss (U. S. C. E. b. m. 39)..... | |
| | 803.50 |
| New Ulm, southwest corner of North Front and First North streets, near Eagle Roller Mills; brass plug in concrete and iron pipe (U. S. C. E. b. m. 585): | |
| Brass plug..... | 818.59 |
| Cap on pipe..... | 822.45 |
| New Ulm, 1 mile below station, in SE. $\frac{1}{4}$ sec. 28, T. 110 N., R. 30 W., right bank downstream bridge seat of highway bridge over Minnesota River, on anchor bolt, in line with truss (U. S. C. E. b. m. 40)..... | |
| | 798.31 |
| New Ulm, 1.5 miles southeast of, in SW. $\frac{1}{4}$ sec. 27, T. 110 N., R. 30 W., in southeast corner of road crossing at foot of bluff; brass plug in concrete and iron pipe (U. S. C. E. b. m. 601): | |
| Brass plug..... | 838.64 |
| Cap on pipe..... | 842.56 |

Courtland, 400 yards south of main road to, 550 feet west of northeast corner of sec. 2, T. 109 N., R. 30 W.; brass plug in concrete and iron pipe (U. S. C. E. b. m. 534):

Brass plug.....
Courtland, 2,000 feet south-southwest of, 20 feet east of road, at top of bluff;
brass-plug in concrete and iron pipe (U. S. C. E. b. m. 616):
Brass plug.....

MADELIA QUADRANGLE.

[Latitude, 44°-44° 15'; longitude, 94° 15'-94° 30'.]

From point near Courtland along Minnesota River to T. 109 N., R. 29 W., SE. $\frac{1}{4}$ sec. 24.

Courtland, 1 mile south of, in SW. $\frac{1}{4}$ sec. 8, T. 109 N., R. 29 W., left bank downstream bridge seat of highway bridge over Minnesota River, on outer anchor bolt (U. S. C. E. b. m. 41).....

T. 109 N., R. 29 W., 450 feet south of quarter corner sec. 15, on slope of bluff, 20 feet west of telephone line running to farmhouse near river on east line of sec. 15; brass plug in concrete and iron pipe (U. S. C. E. b. m. 556):

Brass plug.....
T. 109 N., R. 29 W., SE. $\frac{1}{4}$ sec. 24, 10 feet northeast of road at foot of bluff;
brass plug in concrete and iron pipe (U. S. C. E. b. m. 538):
Brass plug.....

LAKE CRYSTAL QUADRANGLE.

[Latitude, 44°-44° 15'; longitude, 94°-94° 15'.]

From SE. $\frac{1}{4}$ sec. 24, T. 109 N., R. 29 W., along Minnesota River to point near Mankato.

Judson, 100 feet northwest of north end of highway bridge over Minnesota River; brass plug in concrete and iron pipe (U. S. C. E. b. m. 584):

Brass plug.....
Judson, highway bridge over Minnesota River, left bank downstream pier; rivet in cover (U. S. C. E. b. m. 42).....

T. 108 N., R. 27 W., 600 feet southwest of center of sec. 7, 300 feet south of Chicago & North Western Ry. track; brass plug and iron pipe (U. S. C. E. b. m. 529):

Brass plug.....
Cap on pipe.....
Trestle 1625; on bolt in northwest corner of.....
Trestle 1607; on bolt in northwest corner of.....

MANKATO QUADRANGLE.

[Latitude, 44°-44° 15'; longitude, 93° 45'-94°.]

From point near Mankato along Minnesota River to North Mankato.

Mankato, in western part of; on left bank downstream anchor bolt of highway bridge over Blue Earth River (U. S. C. E. b. m. 43).....

Mankato, southeast corner of Front and Main streets, on Front Street side of stone foundation of J. J. Shaubut's building, 2.5 feet from corner; copper plug (U. S. C. E. b. m. 1874 B. M.).....

Mankato, on northeast corner of water table of post office; chiseled cross (U. S. C. E. b. m. 44).....

Mankato, at foot of Sibley Mound, on northeast end at turn in road running around mound; brass plug in concrete and iron pipe (U. S. C. E. b. m. 618):

Brass plug.....
Cap on pipe.....

North Mankato, on north side of road along left bank of river, 1 mile west of highway bridge over Minnesota River, between Mankato and North Mankato, 600 feet west of stone quarries; brass plug in concrete and iron pipe (U. S. C. E. b. m. 578):

| | |
|------------------|---------|
| Brass plug..... | 792. 17 |
| Cap on pipe..... | 796. 05 |

ST. PETER QUADRANGLE.

[Latitude, 44° 18'-44° 30'; longitude, 93° 45'-94°.]

From North Mankato along Minnesota River to Le Sueur.

| | |
|--|---------|
| Kasota , on semicircular stone step at east entrance to women's waiting room of Chicago, St. Paul, Minneapolis & Omaha Ry. station; chiseled cross (U. S. C. E. b. m.)..... | 810. 47 |
| St. Peter , in north end of capstone to west abutment of St. Peter bridge; copper bolt (U. S. C. E. b. m. "1874")..... | 762. 87 |
| Ottawa , in doorsill of two-story square front store, corner of Grand and Liberty streets, opposite post office and near "town well"; copper bolt..... | 799. 88 |
| Le Sueur , in foundation of standpipe, on bolt..... | 762. 35 |

LAKE WASHINGTON QUADRANGLE.

[Latitude, 44° 30'-44° 45'; longitude, 93° 45'-94°.]

At Henderson.

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| Henderson , north abutment of Chicago, St. Paul, Minneapolis & Omaha Ry. bridge 290, on northwest corner of top stone; chiseled cross..... | 741. 48 |
|---|---------|

NEW PRAGUE QUADRANGLE.

[Latitude, 44° 30'-44° 45'; longitude, 93° 39'-93° 45'.]

From Henderson along Minnesota River to Shakopee.

| | |
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| Carver , in west pier of drawbridge over Minnesota River, midway between the rails, 3.35 feet from the dressed edge of pier, 0.85 feet west of center roller; copper bolt (U. S. C. E. b. m. 1874)..... | 722. 35 |
| Shakopee , on southwest corner of concrete step at south entrance to men's waiting room of Chicago, St. Paul, Minneapolis & Omaha Ry. station (U. S. C. E. b. m.)..... | 758. 44 |
| Shakopee , on doorsill of city hall, 2.1 feet from northwest corner of building, marked by cross chiseled in foundation (U. S. C. E. b. m.)..... | 749. 90 |

ASHBY QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 95° 45'-96°.]

From Melby northwest along Great Northern Ry. to Parkdale.

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| Melby , about 1.6 miles northwest of, 4½ telegraph poles northwest of road crossing, on stone arch bridge 68, which is over a stream connecting Lake Christiansa and Pelican Lake, in coping north of track; bottom of hole (C. & G. S. b. m. O ₂)..... | 1, 222. 500 |
| Ashby , at southwest corner of Melby Street and street one block south of Main Street, in northeast corner of property owned by John Madland, 3 meters from property line, in stone post; top of ¼-inch copper bolt (C. & G. S. b. m. P ₂)..... | 1, 294. 292 |
| Ashby , at southeast corner of Main and Larsen streets, in northwest corner and on north face of yellow brick building owned by J. H. Bemis, 1 meter above sidewalk; red-metal disk (C. & G. S. b. m. Q ₂)..... | 1, 298. 252 |

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|---|----------------------|
| Ashby, 1.5 miles northwest of, 17 telegraph poles west of milepost 169, $\frac{3}{4}$ meter northeast of railroad right-of-way fence, on property line of F. Caldwell's and L. O. Bratvold's farms, on iron post; 3-inch red-metal cap (C. & G. S. b. m. R ₂)..... | Feet. 1, 259. 404 |
| Dalton, about 475 meters north of track, in northwest corner of public-school grounds, $\frac{3}{4}$ meter from property line, in stone post; top of $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. S ₂)..... | 1, 381. 015 |
| Dalton, about 175 feet south of building occupied by Bank of Dalton, on prominent little knoll in vacant lot owned by M. T. McMahon who lives in Fergus Falls and owns the Dalton Lumber Co., in terra-cotta pipe; square hole (Dalton astronomic station)..... | 1, 376. 716 |
| Dalton, 50 meters east and 50 meters north of Great Northern Ry. station, on property leased by Minneapolis & Northern Elevator Co., 1 meter north of northwest corner of engine house, on iron post; 3-inch red-metal cap (C. & G. S. b. m. T ₂)..... | 1, 365. 210 |
| Dalton, 1 mile west of, on knoll in pasture in NE. $\frac{1}{4}$ SE. $\frac{1}{4}$, sec. 10, T. 131 N., R. 42 W., about 90 meters south of northeast corner of quarter section of land owned by Ivir Vik, who lives about $\frac{3}{4}$ mile west of south and across a small lake from station, 2.42 meters west of fence at east side of this section; in terra-cotta pipe; square hole (Dalton triang. sta.)..... | 1, 387. 425 |
| Dalton, about 2.2 miles northwest of, 0.5 mile west of milepost 178, on north right of way, on northeast corner of coping of stone-arch bridge, 3 meters below level of rails; red-metal disk (C. & G. S. b. m. U ₂)..... | 1, 242. 123 |

FERGUS FALLS QUADRANGLE.

[Latitude, 46° 15'-46° 30'; longitude, 96°-96° 15'.]

From Parkdale northwest along Great Northern Ry. to Rothsay.

| | |
|--|-------------|
| Parkdale, 15 $\frac{1}{2}$ telegraph poles west of milepost 181, on public road, $\frac{3}{4}$ meter south of right of way fence, in stone post; top of $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. V ₂)..... | 1, 232. 101 |
| Fergus Falls, about 2.3 miles southeast of, 3 telegraph poles east of milepost 184, on south coping of stone-arch culvert which is over a small stream flowing into lake, in center of top surface; $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. W ₂)..... | 1, 204. 443 |
| Fergus Falls, south of tracks, on southeast foundation of railway water tank, in southeast corner of stone; bottom of hole (C. & G. S. b. m. X ₂)..... | 1, 194. 270 |
| Fergus Falls, at the southeast corner of Lincoln Avenue and Mill Street, on doorstep of northern entrance of Pickett Block, in middle of building, 10 centimeters from north edge and 15 centimeters from east edge of step; surface within an outlined square (C. & G. S. b. m. Y ₂)..... | 1, 194. 575 |
| Fergus Falls, at the southeast corner of Bismarck Avenue and Court Street; highest point of check valve of fire plug (C. & G. S. b. m. City)..... | 1, 189. 273 |
| Fergus Falls, on the brick building of Fergus Falls National Bank, on Court Street side, about 12 meters from Lincoln Avenue, in water table; red-metal disk (C. & G. S. b. m. Z ₂)..... | 1, 191. 510 |
| Fergus Falls, about 3.25 miles west of, opposite third telegraph pole west of milepost 190, at west end of a cut and 0.5 meter inside of the north right-of-way fence; red-metal cap on iron post (C. & G. S. b. m. A ₂)..... | 1, 201. 903 |
| Fergus Falls, about 4 miles west of, 6 telegraph poles east of milepost 191, in south side of west abutment of bridge over Otter Tail River, in southeast corner of horizontal surface of beveled capstone; copper bolt (C. & G. S. b. m. B ₂)..... | 1, 180. 887 |

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|---|----------------------|
| Carlisle , 4½ telegraph poles west of station, in northwest corner of road crossing, at corner of fence; red-metal cap on iron post (C. & G. S. b. m. C₄). | Feet. 1, 223. 935 |
| Carlisle , about 3 miles west of, 2½ telegraph poles west of milepost 198, in the center of north coping of stone-arch cattle passage 84, about 5 centimeters from north fence; bottom of square hole, lettered "U. S." (C. & G. S. b. m. D₄). | 1, 224. 217 |
| Rothsay , about 4½ miles southeast of, on east side of public road, in corner of fence, on land of Peter Wilson and due west of his house, about 500 meters southeast of Indian triang. sta., which is on a prominent bald knoll known as Indian Mound in SE. ¼ NE. ¼ sec. 4, T. 134, R. 44; red-metal cap on iron post (C. & G. S. b. m. E₄). | 1, 383. 078 |

ROTHSAY QUADRANGLE.

[Latitude, 46° 15'–46° 30'; longitude, 96° 15'–96° 30'.]

Near Rothsay.

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|--|-------------|
| Rothsay , about 100 meters south of railroad station, on east side of track, in southeast corner of southeast foundation stone of Great Northern Ry. water tank; surface within an outlined square (C. & G. S. b. m. F₄). | 1, 194. 128 |
| Rothsay , at northwest corner of Second and Main streets, in sill of south entrance to yellow-brick building owned by Independent Order of Odd Fellows lodge and used as a bank, at west end of sill; bottom of hole (C. & G. S. b. m. G₄). | 1, 200. 195 |
| Rothsay , about 200 meters east of Great Northern Ry. tracks, on public-school building erected in 1903, in concrete water table at south side of entrance, about 0.2 meter above ground; red-metal disk (C. & G. S. b. m. H₄). | 1, 209. 210 |
| Rothsay , about 3 miles northwest of, 7 telegraph poles south of milepost 207, in northeast corner formed by intersection of public highway and railroad right of way; on property of John Nymoen; red-metal cap on pipe (C. & G. S. b. m. I₄). | 1, 128. 023 |

BARNESVILLE QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 96° 15'–96° 30'.]

From Lawndale northwest along Great Northern Ry. to Downer.

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| Lawndale , 25 meters north of signboard, 50 meters east of main track, on east side of public road as mapped, but on west side of road now in use; about 1.5 meters from telephone pole where line changes direction, in stone post; top of ½-inch copper bolt (C. & G. S. b. m. J₄). | 1, 068. 646 |
| Lawndale , about 1½ miles north of, at road crossing, 5 telegraph poles south of milepost 212, 11 meters west of track; 3-inch red-metal cap on iron post (C. & G. S. b. m. K₄). | 1, 042. 223 |
| Barnesville , about 2 miles south of, 7 meters north of second telegraph pole south of milepost 215, 10 meters west of center of tracks, in center of top surface of large granite bowlder on right of way, almost level with ground; bottom of hole (C. & G. S. b. m. L₄). | 1, 033. 236 |
| Barnesville , about one-third mile south of station, at crossing; about 50 meters east of tracks on east side at corner of public road, in corner of fence, in stone post; top of ½-inch copper bolt (C. & G. S. b. m. M₄). | 1, 024. 656 |
| Barnesville , on Madison Avenue, at west entrance of public-school building, at north end of the horizontal surface of the top step; bottom of hole (C. & G. S. b. m. N₄). | 1, 034. 043 |

- Barnesville, on the side of Front Street, between Second and Third streets,
1 meter north of central entrance to large red-brick building known as
the Oliver Block, in sandstone sill; red-metal disk (C. & G. S. b. m. O₄). 1, 024.
- Barnesville, about 2 miles north of, 1 mile north of junction, 2 telegraph
poles north of milepost 3, opposite wooden culvert 3, in range with tele-
graph poles; 3-inch red-metal cap on iron post (C. & G. S. b. m. P₄)..... 987.
- Barnesville, about 4½ miles northwest of, 5 telegraph poles east of milepost
4 on line running to Fargo, N. Dak., in range with telephone poles on
north side of track; 3-inch red-metal cap on iron post (C. & G. S. b. m. Q₄) 951.

HAWLEY QUADRANGLE.

[Latitude, 46° 45'-47°; longitude, 96° 15'-96° 30'.]

At Downer.

- Downer, 175 meters south of station, on an elevator of Hennepin Elevator
Co., on north side, 2 meters east of northwest corner of building, on
horizontal surface of foundation; ¾-inch copper bolt (C. & G. S. b. m. R₄) 965.
- Downer, 175 meters north of station, at northwest corner of grade crossing,
on railroad right of way, in range with telegraph poles, and 8 meters north
of one; bottom of hole in top of concrete post (C. & G. S. b. m. S₄)..... 967.
- Downer, about 1½ miles north of, 14 telegraph poles north of milepost 10,
at northeast corner of grade crossing, in corner of a pasture fence, on iron
post in soft clay; 3-inch red-metal cap (C. & G. S. b. m. T₄)..... 953.

FARGO QUADRANGLE.

[Latitude, 46° 30'-47°; longitude, 96° 30'-97°.]

From Crawford north along Great Northern Ry. to Averill.

- Crawford, about 1 mile north of, 16 telegraph poles south of milepost 15,
at northwest corner of grade crossing, in range with telegraph poles, and 2
meters north of one; 3-inch red-metal cap on iron post (C. & G. S. b. m. U₄). 930.
- Glyndon, about 1 mile south of, 11 telegraph poles south of milepost 18;
at southwest corner of grade crossing, 4 meters south of a telegraph pole
and in range with the poles; bottom of hole (C. & G. S. b. m. V₄) 923.
- Glyndon, on Northern Pacific Ry. right of way, 11 telegraph poles west of
the railroad crossing, on west abutment of steel girder bridge, on north
side, in center of beveled concrete surface; ¾-inch copper bolt (C. & G. S.
b. m. W₄)..... 922.
- Averill, 1½ miles south of, on railroad right of way, 16 telegraph poles
south of milepost 24, opposite whistling post marked W/X, in range
with telegraph poles, on iron post set in soft clay; 3-inch red-metal cap
(C. & G. S. b. m. X₄) 916.
- Averill, 6 rails north of north switch, 3 meters north of first telegraph pole
north of grade crossing, 13 meters west of railroad track, in range with
telegraph poles; bottom of hole in top of concrete post (C. & G. S. b. m. Y₄). 916.

FELTON QUADRANGLE.

[Latitude, 47°-47° 15'; longitude, 96° 30'-96° 45'.]

From Averill north along Great Northern Ry. to Wheatville.

- Felton, about 3 miles south of, 3 meters north of milepost 30, in range
with telegraph poles; bottom of hole in top of concrete post (C. & G. S.
b. m. Z₄)..... 916.
- Felton, 2 telegraph poles south of milepost 33, 35 meters west of station,
5 meters south of south line of station, in corner of fence on property of
J. J. Hyne; bottom of hole in top of concrete post (C. & G. S. b. m. A₄). 912.

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| Falton , 1 telegraph pole north of milepost 33, at southwest corner of elevator owned by Jenkins Elevator Co., on horizontal surface of foundation stone, 3 inches from south edge and 4 inches from west edge; $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. B ₁)..... | Feet. 911.662 |
| Borup , 3 miles south of, 3 telegraph poles north of milepost 37, in corner of fence at northeast corner of grade crossing, 25 meters east of center of track, on land belonging to A. E. Fox, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. C ₁)..... | 908.972 |
| Borup , 2 $\frac{1}{2}$ telegraph poles north of station, 20 meters east of tracks, in center of west wall of yellow-brick engine house of Cargill Elevator Co. 6 courses of brick below window sill, set in cement; $\frac{3}{4}$ -inch copper bolt (C. & G. S. b. m. D ₁)..... | 908.200 |
| Borup , about 400 meters east of railway tracks, in northeast corner of public-school grounds; 7 meters from east edge of property and 3 meters from north edge, about 420 meters south of Borup triangulation station; copper bolt in top of concrete post (C. & G. S. b. m. E ₁)..... | 908.932 |
| Wheatville , 2 $\frac{1}{2}$ telegraph poles north of milepost 43, at southeast corner of grade crossing, in corner of fence on land of Bore Hoven; top of copper bolt in top of concrete post (C. & G. S. b. m. F ₁)..... | 903.778 |

ADA QUADRANGLE.

[Latitude, 47° 15'–47° 30'; longitude, 96° 30'–96° 45'.]

From Ada north along Great Northern Ry. to Lockhart.

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|--|---------|
| Ada , at northeast corner of county courthouse, on north side of building, 1 foot above ground; red-metal disk (C. & G. S. b. m. G ₁)..... | 907.560 |
| Ada , about 15 meters east of northeast corner of Park and Garfield avenues, in parking, on southernmost of two meridian marks, a stone post about 5 inches square having a metallic disk marked "U. S. Geological Survey Meridian Mark" set in top face; center of disk (U. S. G. S. meridian mark)..... | 904.686 |
| Ada , at northeast corner of Washington and Atlantic avenues, in red-brick building called the Kellar, Sprague and Lofgren Block, in horizontal surface of first step, 6 inches from north edge; surface within an outlined square (C. & G. S. b. m. H ₁)..... | 906.372 |
| Ada , on east side of Pacific Avenue, 60 meters north of Shields Avenue, on city water tank, on northeast corner of steel foot of northeast support to tank, 2 feet above ground, on horizontal surface of steel plate; square cut in outline (C. & G. S. b. m. I ₁)..... | 904.752 |
| Hadler , 4 telegraph poles south of signboard, 3 meters south of milepost 53, in range with telegraph poles, 12 meters west of track; top of copper bolt (C. & G. S. b. m. J ₁)..... | 900.401 |
| Hadler , 1.2 miles east and $\frac{1}{4}$ mile north of, in Pleasant View township, near northeast corner of SW. $\frac{1}{4}$ sec. 15, in corner of pasture fence, about 5 meters south of quarter-section road, about 500 meters southwest of Wicklow triangulation station, on iron post set in sandy clay; 3-inch red-metal cap (C. & G. S. b. m. K ₁)..... | 905.444 |
| Lockhart , 3 telegraph poles north of milepost 58, at southeast corner of grade crossing, 50 meters east of main Great Northern Ry. track, in corner of fence, on the Lockhart farm; 3-inch red metal cap on iron post (C. & G. S. b. m. L ₁)..... | 892.449 |

BELTRAMI QUADRANGLE.

[Latitude, 47° 30'-47° 45'; longitude, 96° 30'-96° 45'.]

From Beltrami north along Great Northern Ry. to Crookston.

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| Beltrami, 50 meters north of station, on west side of track, at southwest corner of railroad water tank, in southwest corner of horizontal surface of stone; bottom of hole (C. & G. S. b. m. M ₂) | Feet. 903. 564 |
| Beltrami, about 200 meters north of station, on building of Imperial Elevator Co., in rough granite foundation stone of elevator, on north side, 1 meter from west side and 0.3 meter above ground, in vertical surface; $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. N ₂) | 904. 230 |
| Beltrami, 1 mile north of, 4 telegraph poles north of milepost 66, 20 meters south of grade crossing, east of tracks, 2 meters north of a telegraph pole and in range with telegraph poles; 3-inch red-metal cap on iron post (C. & G. S. b. m. O ₂) | 900. 644 |
| Russia, 30 meters north of signboard, 55 meters east of track, at northwest corner of road crossing, on Russia farm; top of copper bolt (C. & G. S. b. m. P ₂) | 893. 380 |
| Russia, 1 mile north of, 7 telegraph poles north of milepost 72, 30 meters east of track, on right of way, in a fence corner; 3-inch red-metal cap on iron post (C. & G. S. b. m. Q ₂) | 889. 513 |
| Kittson, 110 meters north of signboard, west of track, in range with telegraph poles; top of copper bolt (C. & G. S. b. m. R ₂) | 883. 745 |
| Kittson, $1\frac{1}{4}$ miles north of, 8 telegraph poles south of milepost 77, at northwest corner of grade crossing, in a corner of fence; 3-inch red-metal cap on iron post (C. & G. S. b. m. S ₂) | 880. 074 |
| Kittson, $2\frac{1}{4}$ miles north of, about 200 meters west of Andover triangulation station, at northwest corner of grade crossing and 5 meters north of highway limit; 3-inch red-metal cap on iron post (C. & G. S. b. m. T ₂) .. | 879. 217 |

CROOKSTON QUADRANGLE.

[Latitude, 47° 45'-48°; longitude, 96° 30'-96° 45'.]

From Crookston north along Great Northern Ry. to Euclid.

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| Crookston, on east side of south abutment of steel railroad bridge over Red Lake River, in northeast corner of horizontal surface of coping stone; $\frac{1}{4}$ -inch copper bolt (C. & G. S. b. m. U ₂) | 869. 168 |
| Crookston, at side entrance of store at northwest corner of Main and Roberts streets, 35 meters west of east line of building, at west end of horizontal surface of top step; bottom of hole (C. & G. S. b. m. V ₂) | 873. 483 |
| Crookston, on the northwest corner of Second and Main streets, at entrance to Merchants' National Bank building, on north side of top of first step; a square in outline (C. & G. S. b. m. City) | 867. 731 |
| Crookston, on north side of county courthouse, 2 feet from east side, 3 feet above ground, in second course of stone; red-metal disk (C. & G. S. b. m. W ₂) | 891. 045 |
| Crookston, about 3 miles north of, 65 meters south of Northern Pacific Ry. crossing, on west side of Great Northern Ry. tracks, in range with telegraph poles, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. X ₂) | 891. 350 |
| Shirley, 120 meters south of signboard, in range with telegraph poles, set in clay; top of copper bolt (C. & G. S. b. m. Y ₂) | 902. 839 |

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|---|-------------------|
| Shirley, 1 mile north of, directly opposite signboard "Shirley 1 mile," 13 telegraph poles north of milepost 6, 12 meters south of telegraph pole with section numbers 53 and 52, on right of way, in range with telegraph poles, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. Z ₂) | Feet. 903. 073 |
| Euclid, about 0.5 mile south of, 5½ telegraph poles north of milepost 12, on east side of track, at southeast corner of surveyed highway crossing, in range with telephone poles; top of copper bolt in top of concrete post (C. & G. S. b. m. A ₂)..... | 898. 450 |
| Euclid, 200 meters west of station, in southeast corner of public-school ground, 5 feet from south property line and 1 foot from east property line, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. B ₂) | 891. 111 |
| Euclid, about 2 miles north of, 10 telegraph poles south of milepost 15, 17 paces west of track, in northeast corner of cemetery fence, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. C ₂)..... | 887. 328 |

ANGUS QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 96° 30'-96° 45'.]

Near Angus.

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| Angus, near, about 200 meters southwest of Sherack triangulation station, in northeast corner of NE. ¼ sec. 1, Keystone township, 25 paces west of road crossing, 1 foot south of pasture fence, on iron post set in cement; 3-inch red-metal cap (C. & G. S. b. m. D ₂) | 859. 723 |
| Angus, 400 meters south of station, 200 meters west of track, in southeast corner of public-school grounds, set in clay; top of copper bolt (C. & G. S. b. m. E ₂)..... | 871. 573 |
| Angus, about 2½ miles north of, 5 meters south of milepost 23, in range with telegraph poles, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. F ₂)..... | 869. 083 |

WARREN QUADRANGLE.

[Latitude, 48°-48° 15'; longitude, 96° 45'-97°.]

Near Warren.

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|---|----------|
| Warren, 0.25 mile south of station, 3½ telegraph poles south of milepost 29, on east side of tracks, in corner of right of way fence, set in clay; top of copper bolt (C. & G. S. b. m. G ₂)..... | 853. 903 |
| Warren, 300 meters southeast of station, at west entrance of county courthouse, at north end of horizontal surface of second step; bottom of hole (C. & G. S. b. m. H ₂)..... | 857. 124 |
| Warren, at south entrance to Warren State Bank, on northwest corner of Johnson Avenue and Main Street, at west end of horizontal surface of stone step; red-metal disk (C. & G. S. b. m. I ₂) | 856. 576 |
| Warren, 400 meters north of station, on city water tank, on northeast corner of steel foot of structure, 1 foot above ground; a square cut in outline (C. & G. S. b. m. J ₂)..... | 857. 426 |
| Warren, 2½ miles north of, 7½ telegraph poles south of milepost 32, on right of way west of track, in a corner of right of way and cattle-guard fence, on iron post set in cement; 3-inch red-metal cap (C. & G. S. b. m. K ₂)..... | 853. 233 |

ARGYLE QUADRANGLE.

[Latitude, 48° 15'-48° 30'; longitude, 96° 45'-97°.]

From point 3 miles south of Argyle north along Great Northern Ry. to Stephen.

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| Argyle, about 2 miles south of, 10½ telegraph poles north of milepost 37, at northwest corner of grade crossing, in a corner of right-of-way and cattle-guard fences, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. L ₄)..... | Fe 847. |
| Argyle, 500 meters west of depot, in northwest corner of public-school grounds, set in clay; top of copper bolt (C. & G. S. b. m. M ₄)..... | 845. |
| Argyle, at east entrance of yellow-brick building occupied by Farmers and Merchants' Bank, on southwest corner of Third Street and Pacific Avenue on north end of horizontal surface of third stone step; a square in outline, lettered "U. S." (C. & G. S. b. m. N ₄)..... | 850. |
| Argyle, near, in Tamarac township, in sec. 35, T. 157, R. 48, about 420 meters north of Argyle triangulation station, on west side of road leading to a farmhouse, in corner of fence, on property of Mr. Josec, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. O ₄)..... | 852. |
| Stephen, 1 mile south of, 3 telegraph poles north of milepost 46, at northwest corner of grade crossing, 2 meters north of a telegraph pole and in range with the poles, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. P ₄)..... | 837. |
| Stephen, on northwest corner of Pacific Avenue and Fifth Street, at east entrance to red-brick building owned by the Bank of Stephen, at north end of top of the second step; red-metal disk (C. & G. S. b. m. Q ₄)..... | 830. |
| Stephen, 600 meters west of station, on east side of public-school building, 2 feet from south side, in eighth course of brick above water table; ½-inch copper bolt (C. & G. S. b. m. R ₄)..... | 831. |
| Stephen, 225 meters east of station, at northeast corner of road crossing, in a corner of fence, set in clay; top of copper bolt (C. & G. S. b. m. S ₄).... | 828. |
| Stephen, near, in northwest corner of NE. ¼ sec. 4, T. 157, R. 48, 37 meters southwest of Stephen west base, 11 meters south of road, 5 meters east of drainage ditch, on iron post set in clay; 3-inch red-metal cap (C. & G. S. b. m. T ₄)..... | 830. |
| Stephen, about 0.5 mile north and 0.75 mile east of, in Sinnot township, in southwest corner of SE. ¼ sec. 33, T. 158, R. 48, on cultivated land of J. Gillespie of Stephen, 31 meters east of half-section line and 15 meters north of center of east-west section road, on top of granite block, about 3 inches south of copper bolt marking the station; an outlined square cut (C. & G. S. b. m. Stephen, west base) | 830. |

APPENDIX B.

ELEVATIONS OF STONE-LINE BENCH MARKS ESTABLISHED BY THE MISSISSIPPI RIVER COMMISSION.

PRIMARY LEVELING.

Aitkin, Alma, Anoka, Becker, Belle Prairie, Brainerd, Cannon Falls, Clearwater, Cross Lake, Cuyuna, Elk River, Freeburg, Galesville, La Crescent, Lake City, Lake Elmo, Little Falls, Maiden Rock, Minneapolis, Minnetonka, Red Wing, St. Cloud, St. Paul, Stoddard, Sylvan, Wabasha, and Winona quadrangles.

AITKIN, ANOKA, BENTON, CROW WING, DAKOTA, GOODHUE, HENNEPIN, HOUSTON, MORRISON, RAMSEY, SHERBURNE, STEARNS, WABASHA, WASHINGTON, WINONA, AND WRIGHT COUNTIES.

The following descriptions and elevations of bench marks from Iowa-Minnesota State line, along Mississippi River to Aitkin are taken from Part 7, Report of Chief of Engineers, United States Army, 1900, and from Report of the Mississippi River Commission, 1905, with elevations corrected to 1912 adjustment of precise leveling.

The tile and pipe marks referred to in the following table consist of: A subsurface mark, which is a vitrified clay slab, 18 by 18 by 4 inches buried about 3½ feet underground, with a copper bolt leaded into the center; and a 4-inch iron pipe, 4 feet long, extending above the surface of the ground and having a brass cap bearing the inscription "Mississippi River Commission," etc. Around the center of both tile and cap are inscriptions designating the character of the mark, thus: Triangulation station, "U. Δ S."; precise bench mark, "P. B. M. U. ⊙ S.", ordinary bench mark "B. M. U. □ S."

Bench marks are placed in pairs on lines, called "stone lines," crossing the river at intervals of about 3 miles.

STODDARD QUADANGLE.

[Latitude, 43° 30'–43° 45'; longitude, 91°–91° 15'.]

Along Mississippi River.

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| Iowa-Minnesota State line, about 1½ miles north of, on Chicago, Milwaukee & St. Paul Ry. bridge 590 K, on northwest corner of west end of south abutment, 2.8 feet below and 7.7 feet west from center of track; square cut (U. S. C. E. t. b. m. 32 R. B.)..... | Feet. 634. 92 |
| Island No. 128, 150 meters above head of, 25 meters from top of bank, about midway between first and second wing dams above Island No. 128; tile and pipe. Bearing trees: 30-inch elm, 110° 25' distant 6.0 meters; 15-inch elm, 205° 00' distant 4.5 meters; 12-inch ash, 358° 00' distant 10.0 meters (U. S. C. E. b. m. 210-3): | |
| Bolt in tile..... | 624. 06 |
| Cap on pipe..... | 628. 03 |

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| Genoa, opposite, 15 meters from shore, 0.5 meter south of an east-west wire fence, 100 meters below lower log house of two, 100 meters below mouth of small slough, 24-inch double cottonwood tree 329° 24' distant 38.9 meters; tile and iron pipe (U. S. C. E. b. m. 211-3): | |
| Bolt in tile..... | 625. 37 |
| Cap on pipe..... | 629. 35 |
| Genoa, opposite, between two lakes, about opposite center of first lake back of 211-3, at upper end of small patch of willows, 100 meters east of east bank of large lake, from 211-3 to 211-4, 106° 55' 30'' distant 741.7 meters (U. S. C. E. b. m. 211-4): | |
| Bolt in tile..... | 620. 42 |
| Cap on pipe..... | 624. 39 |

FREEBURG QUADRANGLE.

[Latitude, 43° 30' - 43° 45'; longitude, 91° 15' - 91° 30'.]

Along Mississippi River.

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| Island No. 128, 150 meters above head of, on ridge back of small slough, planted in timber; tile and iron pipe. Bearing points: B. m. 210-3, 84° 02' distant 760.6 meters; 15-inch elm tree (double) 350° (mag.) distant 2.2 meters; 24-inch elm 252° (mag.) distant 12.0 meters; 18-inch elm 192° 30' (mag.) distant 3.8 meters (U. S. C. E. b. m. 210-4): | |
| Bolt in tile..... | 623. 32 |
| Cap on pipe..... | 627. 28 |
| Reno Junction, about 1 mile below, on downstream stone abutment of railroad bridge 614 K, on upstream side and river end, 2.3 feet below track and 8.3 feet east of center; square cut (U. S. C. E. t. b. m. 33, R. B.). | 635. 93 |
| Reno Junction, on Chicago, Milwaukee & St. Paul Ry., opposite station; base of rail..... | 638. 2 |
| Reno Junction, about one mile above, on line of railroad at junction of Raft channel and Minnesota slough, on downstream side and river end of upstream stone abutment of bridge 626 K, 2 feet below track and 8 feet toward river from center, directly west from head of island; square cut (U. S. C. E. t. b. m. 34, R. B.)..... | 636. 53 |
| Genoa, about 4 miles above, at foot of bluffs, 0.5 meter east of west fence of wagon road, 25 meters west of center of track of Chicago, Milwaukee & St. Paul Ry., 90 meters above bridge 630 K, about 25 meters below a 1½-story frame house, about 150 meters below Fairy Rock; tile and iron pipe: | |
| Bolt in tile..... | 645. 94 |
| Cap on pipe..... | 649. 87 |
| Island No. 120, on right bank at head of Raft channel, 0.5 meter east of west fence along wagon road, on west side of Chicago, Milwaukee & St. Paul Ry., 30 meters below bridge 658 K, 6 meters above milepost 12-149, and opposite second telegraph pole below yellow frame house at road-side; tile and iron pipe: | |
| Bolt in tile..... | 645. 24 |
| Cap on pipe..... | 649. 21 |
| Brownsville, in wall of Diamond Jo stone warehouse, about 3 feet above ground and near figures 91 cut in wall, on top of face of rock; cross (U. S. C. E. t. b. m. 1 R. B.)..... | 635. 14 |
| Brownsville, on downstream end of upper abutment of bridge 674 K, 8.5 feet toward river from center of track, 4 feet below top of rails, 0.5 foot above ground; top corner within square (U. S. C. E. t. b. m. 2 R. B.).. | 638. 53 |

Swift Slough, 100 meters above head of, about midway between first dam above and first dam below Swift Slough, 10 meters from top of right bank; tile and iron pipe. Bearing trees: 24-inch elm, $165^{\circ} 25'$ distant 3.3 meters; 36-inch elm, $226^{\circ} 55'$ distant 7.5 meters; 20-inch elm, $321^{\circ} 06'$ distant 3.5 meters (U. S. C. E. 214-3):

Bolt in tile..... Feet. 629. 18

Cap on pipe..... 633. 13

Brownsville, Minn., 2 miles above, on west bank of large slough, 15 meters above road crossing, 125 meters below culvert 682, 10 meters east of east right of way fence of Chicago, Milwaukee & St. Paul Ry.; tile and iron pipe. Bearing points: 214-3, $271^{\circ} 06'$ distant 694.2 meters; 18-inch cottonwood tree, 240° (mag.) distant 4.5 meters; 18-inch birch tree 312° (mag.) distant 14.2 meters (U. S. C. E. b. m. 214-4):

Bolt in tile..... 632. 16

Cap on pipe..... 636. 10

LA CRESCENT QUADRANGLE.

[Latitude, $43^{\circ} 48' 44''$; longitude, $91^{\circ} 18' 01'' 30''$.]

Along Mississippi River.

Root River, 25 meters below mouth of, on right bank, 30 meters back from shore; tile and iron pipe. Bearing trees: 18-inch maple, $313^{\circ} 46'$ distant 17.5 meters; 18-inch elm, $52^{\circ} 45'$ distant 15.0 meters (U. S. C. E. b. m. 215-3):

Bolt in tile..... 631. 17

Cap on pipe..... 635. 23

Root River, at edge of heavy timber on east bank of lake, about opposite upper end of lake, 150 meters below upper end of opening. Bearing points: 215-3, $267^{\circ} 49'$ distant 848.3 meters; 24-inch cottonwood tree, 71° (mag.) distant 4.2 meters; 36-inch elm, 225° (mag.) distant 26.0 meters; 15-inch maple, 338° (mag.) distant 3.6 meters; tile and iron pipe:

Bolt in tile..... 629. 37

Cap on pipe..... 633. 43

La Crescent, base of rail..... 650. 7

Grant Island, opposite foot of, on right bank, 10 meters back from shore, on west side of wagon road. Bearing trees: 36-inch elm, $51^{\circ} 50'$ distant 11.1 meters; 36-inch elm, $95^{\circ} 42'$ distant 13.5 meters; tile and iron pipe (U. S. C. E. b. m. 216-3):

Bolt in tile..... 636. 76

Cap on pipe..... 640. 74

Grant Island, in small bunch of willows, on edge of large open spot which extends back to bluffs. Bearing points: 216-3, $262^{\circ} 00'$ distant 563.2 meters; 10-inch willow tree, 160° (mag.) distant 6.6 meters; 10-inch willow, 270° (mag.) distant 2.0 meters; tile and iron pipe (U. S. C. E. b. m. 216-4):

Bolt in tile..... 628. 97

Cap on pipe..... 632. 92

River Junction, at foot of bluff, 0.5 meter east of fence at side of wagon road, directly opposite north end of River Junction station; tile and pipe (U. S. C. E. b. m. 217-3):

Bolt in tile..... 664. 21

Cap on pipe..... 668. 17

Dresbach Island, opposite foot of, at side of wagon road, 0.5 meter west of west right-of-way fence of Chicago, Milwaukee & St. Paul Ry., 90 meters above wagon road leading up large ravine, 125 meters above small wagon

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| bridge opposite rock culvert under railroad, 30 meters above edge of timber on side of bluff; tile and iron pipe (U. S. C. E. b. m. 218-3): | |
| Bolt in tile..... | 689. 52 |
| Cap on pipe..... | 693. 47 |
| Dresbach Slough, at mouth of, 1,080 feet above milepost 135 on line of railroad, 12 feet west from center of track, on rock; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 153)..... | 663. 33 |
| Dakota, at Chicago, Milwaukee & St. Paul Ry. station; base of rail..... | 654. 18 |
| Dakota, 2½ miles above, just above Island No. 90, 660 feet above Henry Winters's house, on line of railroad, 12 feet west of center of track; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 146)..... | 671. 23 |
| Queens Bluff, about 600 meters below, 113 meters below milepost 128-12, 40 meters below a blacksmith shop at foot of bluff, 0.5 meter from fence in front of cultivated field, on bluff side of railroad; tile and iron pipe (U. S. C. E. b. m. 220-3): | |
| Bolt in tile..... | 676. 11 |
| Cap on pipe..... | 680. 11 |
| Richmond, about 1 mile above, at E. Leach's crossing, just above upper roadside fence, 15 feet east of center of track, on embedded boulder; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 142)... | 670. 05 |
| Richmond; base of rail..... | 655. 28 |

GALESVILLE QUADRANGLE.

[Latitude, 44°-44° 15'; longitude, 91° 15'-91° 30'.]

Along Mississippi River.

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| La moille, 4,600 feet above, opposite foot of Island No. 77, 1,950 feet below center of bridge 32, 1,686 feet above milepost 122, at upper end of cut, 8 feet northeast from center of track, on embedded boulder; highest point in square, marked "U. □ S." (U. S. C. E. t. b. m. 135)..... | 656. 39 |
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WINONA QUADRANGLE.

[Latitude, 44°-44° 15'; longitude, 91° 30'-91° 45'.]

Along Mississippi River.

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| Winona, six miles below bridge, 400 meters above foot of Blacksmith Slough, on ground about 10 feet higher than railroad track, back of diamond board, about 190 meters above lower end of first curve above Blacksmith Slough, 1 meter from fence, on right of way; tile and pipe (U. S. C. E. b. m. 223-3): | |
| Bolt in tile..... | 667. 12 |
| Cap on pipe..... | 671. 08 |
| Homer; base of rail..... | 659. 0 |
| Homer, 1½ miles above, on right bank, on property of E. A. Goodfellow, in corner of fence at intersection of Mr. Goodfellow's west line and north fence along wagon road, about 250 meters back from river and same distance to a point opposite upper end of a large railroad trestle; tile and iron pipe (U. S. C. E. b. m. 224-3): | |
| Bolt in tile..... | 660. 22 |
| Cap on pipe..... | 664. 19 |
| Winona, along river front, on 31st capstone up river from stone steps on Center Street, 29th capstone below Main Street, 0.65 meter above lower end of stone, 0.30 meter back from outer face of wall, in top of stone wall; copper bolt leaded vertically (U. S. C. E. b. m. 225-3), marked "U. S. ○ B. M."..... | 665. 13 |

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| Winona, at Mark and Lafayette streets, about 50 meters southeast of Chicago, Milwaukee & St. Paul Ry. station, near southwest corner of railway water tank, in top of east stone pier, pier is one of two which stand farthest south; copper bolt leaded vertically marked "U. S. O B. M." (U. S. C. E. b. m. 235-4)..... | Feet. 657.48 |
| Wild Landing, 3 miles above wagon bridge at Winona, on left bank, outside right of way of Chicago, Burlington & Quincy R. R. at Wild Landing, 2 meters from west fence and opposite a point 30 meters above north wall of Mr. Wild's stone house; tile and iron pipe (U. S. C. E. b. m. 226-2): | |
| Bolt in tile..... | 660.05 |
| Cap on pipe..... | 664.01 |
| Wild Landing, 3 miles above wagon bridge at Winona, back of Island No. 66, 15 meters back from bank of slough, in grass on high ground, about 250 meters below dam at head of Island No. 66, 382.7 meters back of 226-3. Blazed trees: 10-inch elm, 280° (mag.) distant 22.5 meters; 18-inch cottonwood, 265° (mag.) distant 43.0 meters; tile and iron pipe (U. S. C. E. b. m. 226-4): | |
| Bolt in tile..... | 647.83 |
| Cap on pipe..... | 651.82 |
| Minnesota City, Chicago, Milwaukee & St. Paul Ry.; base of rail..... | 675.0 |

MINNEKA QUADRANGLE.

[Latitude, 44°-44° 18'; longitude, 91° 45'-53°.]

Along Mississippi River.

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| Chimney Rock, about 400 meters above prominent bluff point known as, 0.5 meter north of south right-of-way fence of Chicago, Milwaukee & St. Paul Ry., on bank of railroad cut, 98 meters below railroad culvert L 531, a large detached boulder lies between bench mark and wagon road; tile and iron pipe (U. S. C. E. b. m. 229-3): | |
| Bolt in tile..... | 678.65 |
| Cap on pipe..... | 682.11 |
| Minneka, 1 mile above; high water mark 1881..... | 666.27 |
| Minneka, 1 mile above; high water mark 1888..... | 664.11 |
| Minneka, in lower end of, 0.5 meter inside railroad right-of-way fence and end of line fence between small garden lots, 45 meters above road crossing where bluff wagon road turns back from railroad to enter town, 120 meters above culvert L 591; tile and iron pipe (U. S. C. E. b. m. 230-3): | |
| Bolt in tile..... | 676.79 |
| Cap on pipe..... | 680.87 |
| Minneka, Chicago, Milwaukee & St. Paul Ry.; base of rail..... | 667.11 |
| Minneka, 3 miles above, about 300 meters above head of Island No. 47, 375 meters above Fishers Island, on right bank 15 meters back from edge; tile and pipe. Trees blazed with triangle facing bench mark: 12-inch cottonwood, 77° 02' distant 2.2 meters; 15-inch cottonwood, 147° 02' distant 4.7 meters (U. S. C. E. b. m. 231-3): | |
| Bolt in tile..... | 658.95 |
| Cap on pipe..... | 662.90 |
| Minneka, 3 miles above, about 300 meters above head of Island No. 47, 1,090.5 meters back of b. m. 231-3, at upper end of grove of large elm trees; tile and iron pipe blazed with triangle facing stone: 24-inch elm, 178° (mag.) distant 5 meters; 18-inch elm, 7° (mag.) distant 8.5 meters; 24-inch elm, 75° (mag.) distant 26.6 meters. | |
| Bolt in tile..... | 656.38 |
| Cap on pipe..... | 660.33 |

ALMA QUADRANGLE.

[Latitude, 44° 15'-44° 30'; longitude, 91° 45'-52°.]

Along Mississippi River.

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| Alma, Wis., 3 miles below, 20 meters back from West Newton chute, 0.75 mile above foot of Island No. 42, 150 meters below where sand bluff strikes bank of chute, about 250 meters above a house, 20 meters below dike. Trees blazed with triangle facing bench mark: 15-inch birch, 20° 06' distant 12.5 meters; 15-inch ash, 70° 06' distant 19.9 meters; 24-inch elm, 184° 16' distant 14.9 meters; 15-inch hickory, 334° 36' distant 9 meters; tile and iron pipe (U. S. C. E. b. m. 232-4): | Feet. |
| Bolt in tile..... | 662. 28 |
| Cap on pipe..... | 666. 24 |
| Alma sawmill, 0.75 mile below, at east fence on right of way of Chicago, Burlington & Quincy R. R., by milepost 81, in front of C. Moser's house, 16 feet below gate for farm crossing, 3 feet underground; copper bolt in tile (U. S. p. b. m. 149)..... | 675. 668 |
| Alma, 3 miles above, on property of George Barton, 23 meters below corner of wire fence, also corner of small timber, 35 meters above barn along wire fence, Mr. Barton's house 30° (mag.) distant 69 meters; tile and iron pipe (U. S. C. E. b. m. 234-3): | |
| Bolt in tile..... | 694. 38 |
| Cap on pipe..... | 698. 40 |
| Alma, 3 miles above, on property of S. Brown, on top and at edge of sand ridge, at bend of fence, 10 meters above corner of fence, 200 meters below large red barn; tile and iron pipe (U. S. C. E. b. m. 234-4): | |
| Bolt in tile..... | 698. 09 |
| Cap on pipe..... | 701. 94 |
| Alma, Wis., and Teepeeota Point, midway between, on right bank, on top of sand bluff directly back from sheer log boom, on 7-inch oak tree; spike in root (U. S. C. E. t. b. m. 100)..... | 698. 31 |

WABASHA QUADRANGLE.

[Latitude, 44° 15'-44° 30'; longitude, 92°-92° 15'.]

Along Mississippi River.

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| Wabasha, 1½ miles below, in low ground covered with small willows, about 500 meters below upper end of willows, 100 meters from right bank of Coats Island Chute, on small rise between two marshes on property of Louis Housweidel, about 1 mile below lower end of Wabasha; tile and pipe 3 feet long (U. S. C. E. b. m. 235-3 triangulation east base): | |
| Bolt in tile..... | 663. 92 |
| Cap on pipe..... | 666. 95 |
| Wabasha, about 1 mile below, 0.5 meter east of east fence and 1.5 meters north of southeast corner of graveyard, directly toward river from county farm buildings, on top of sand terrace; tile and iron pipe (U. S. C. E. b. m. 235-4): | |
| Bolt in tile..... | 696. 25 |
| Cap on pipe..... | 700. 22 |
| Wabasha, on Chicago, Milwaukee & St. Paul Ry.; base of rail..... | 706. 75 |
| Wabasha, in lower part of, at top of bank of river, on River Street, 6 meters northeast of fence, 26 meters northwest of southeast corner of fence around pasture lot belonging to Lucas Kuehn, in sec. 33, T. 111, R. 10; tile and pipe (U. S. C. E. triangulation west base, Wabasha): | |
| Bolt in tile..... | 669. 31 |
| Cap on pipe..... | 673. 27 |

Island No. 29, about 0.5 mile below foot of, on top of sand ridge back of towhead, 25 meters back of bank of slough, in corner of fence on property of Azel D. Southworth and about 100 meters above his barn; tile and pipe (U. S. C. E. b. m. 236-3):

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| Bolt in tile..... | Feet. 704. 85 |
| Cap on pipe..... | 708. 87 |

Wabasha, 0.25 mile above Chicago, Milwaukee & St. Paul Ry. station, 961.58 meters back of 236-3, at foot of bluffs near limekiln, west of old north-south fence line which divides property of Pat. Kennedy on the east and Rudy Burkhart on the west, limekiln 145° 00' distant 18 meters; tile and iron pipe (U. S. C. E. b. m. 236-4):

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|-------------------|---------|
| Bolt in tile..... | 734. 22 |
| Cap on pipe..... | 738. 20 |

Reads Landing, about 1½ miles above, at foot of Lake Pepin, 0.5 meter from fence, on right of way of railroad, 80 meters above milepost 63-77, 70 meters below whistling post; tile and iron pipe (U. S. C. E. b. m. 237-3):

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|-------------------|---------|
| Bolt in tile..... | 694. 17 |
| Cap on pipe..... | 698. 14 |

Pepin, Wis., at upper end of, 0.5 meter outside right of way of Chicago, Milwaukee & St. Paul Ry., on property of Fred S. Mouse, elevation about 20 feet above railroad track, 15 meters upstream from a point opposite station at Kings Coulee, 10-inch blazed oak tree 47° 12' distant 14.0 meters; tile and pipe (U. S. C. E. b. m. 238-3):

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|-------------------|---------|
| Bolt in tile..... | 704. 47 |
| Cap on pipe..... | 708. 43 |

LAKE CITY QUADRANGLE.

[Latitude, 44° 15'-44° 30'; longitude, 92° 15'-92° 30'.]

Along Mississippi River.

Lake City, 2½ miles below Government breakwater, above Kings Coulee, 11 rail lengths from milepost 69-71, on rock point between Chicago, Milwaukee & St. Paul Ry. and Lake Pepin; tile and iron pipe (U. S. C. E. b. m. 239-3 triangulation Loon):

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|-------------------|---------|
| Bolt in tile..... | 687. 27 |
| Cap on pipe..... | 691. 23 |

Lake City, in upper end of, on south side of road leading toward Sugar Loaf, 0.5 meter from fence and 25 meters back from corner of street, about 150 meters back from bank of lake; road that runs toward Sugar Loaf is about 400 meters below an old mill which stands on bank of lake at point where shore makes a big bend toward Central Point; tile and iron pipe (U. S. C. E. b. m. 240-3):

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|-------------------|---------|
| Bolt in tile..... | 706. 86 |
| Cap on pipe..... | 710. 83 |

Lake City, on Chicago, Milwaukee & St Paul Ry.; base of rail 710. 2

MAIDEN ROCK QUADRANGLE.

[Latitude, 44° 30'-44° 45'; longitude, 92° 15'-92° 30'.]

Along Mississippi River.

Florence, in upper part of, 0.5 meter north of east-west fence on property of T. E. Freeman, fence is Mr. Freeman's south line, about 200 meters north of wagon road that leads from Florence to bluffs, 25 meters back from bank of lake; tile and iron pipe (U. S. C. E. b. m. 241-3):

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|-------------------|---------|
| Bolt in tile..... | 672. 95 |
| Cap on pipe..... | 676. 92 |

Florence, 85 meters north of wagon road which runs from Florence toward bluffs, 12 meters east of fence that follows top of sand ridge, on top and near edge of sand ridge; tile and iron pipe (U. S. C. E. b. m. 241-4):

Bolt in tile.....

Cap on pipe.....

Lake Pepin, about 0.5 mile back of west shore, 1½ miles below Lake Side Hotel, at fork of roads in front of convent, 36 feet west from main road and 25 feet south from end of culvert under road leading to convent, on 2-foot oak tree; nail in root (U. S. C. E. t. b. m. 74)

Frontenac, about 500 meters above hotel, on right bank of Lake Pepin on edge of bank, about 20 meters below a point opposite an old limekiln, 150 meters above an old foundation of building which stands on bank of lake. Bearing points: Blazed 10-inch ash tree, 258° 40' distant 2.0 meters; southeast corner of limekiln, 98° 10' distant 34.0 meters; tile and iron pipe (U. S. C. E. b. m. 242-3):

Bolt in tile.....

Cap on pipe.....

Lake Pepin, on right bank of, about 3,280 feet below wide flat wooded sand point, which is about 3½ miles above Lake Side, 300 feet below an exceedingly large rock, under a 6-inch ash tree blazed, on an embedded boulder about the middle of beach; highest point in square, marked "U. □ S."

Frontenac, about 3 miles above, on right bank of Lake Pepin, on ridge 4 meters back of edge, 50 meters above where rocky shore ends and gravel bar begins, 1 mile below Government light, 20 meters from foot of bluff, on property of Lyman Boynton, 15-inch oak tree blazed 162° 08' distant 4.2 meters; 10-inch basswood tree blazed 250° 08' distant 6.3 meters; tile and pipe (U. S. C. E. b. m. 243-3):

Bolt in tile.....

Cap on pipe.....

Bay City, Wis., about 0.5 mile below, on opposite bank, on side of bluff in timber, about 25 meters back from shore, about 40 feet above river, in front of cleared spot on side of bluff, opposite upper end of large boulder which stands about 15 meters back of b. m., 125 meters above upper end of Island No. 28, 8-inch oak tree blazed 120° 32' distant 4.2 meters; 7-inch linn tree blazed 36° 32' distant 5.2 meters; tile and iron pipe (U. S. C. E. b. m. 244-3):

Bolt in tile.....

Cap on pipe.....

Red Wing, 2½ miles below, in front of Reform School building, 20 feet from shore, 10 feet southwest of blazed elm tree, on triangular sandstone, on right bank; square, marked "U. □ S." (U. S. C. E. t. b. m. 59)...

RED WING QUADRANGLE.

[Latitude, 44° 30'-44° 45'; longitude, 92° 30'-92° 45'.]

Along Mississippi River.

Red Wing, about 2 miles below, at wagon road crossing on railroad track, 1½ meters below east road fence, 6.1 meters north of center of track, about 0.25 mile above slaughterhouse; tile and iron pipe (U. S. C. E. 245-3=p. b. m. 114-115):

Bolt in tile.....

Cap on pipe.....

Red Wing, on Chicago, Milwaukee & St. Paul Ry.; base of rail.....

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| Red Wing, 1½ miles above, 40 meters back from right bank of river and 0.75 mile below mouth of Cannon River, about 150 meters above a point opposite head of small slough which connects river with Upper Lake, in timber, near a 4-foot elm—the largest tree in the vicinity. Blazed trees, 48-inch elm, 126° 01' distant 7.9 meters; 10-inch ash, 264° 01' distant 4.5 meters; 12-inch maple, 1° 46' distant 3.8 meters; tile and iron pipe (U. S. C. E. b. m. 246-3): | |
| Bolt in tile..... | Feet. 671. 03 |
| Cap on pipe..... | 675. 00 |
| Red Wing, 1½ miles above, 1,030 meters back of 246-3, on left bank of slough which joins Hay Creek through a lake about 400 meters above mouth of Hay Creek, bench mark is 30 meters south of an abrupt turn to east in slough, large maple across slough on point; tile and iron pipe (U. S. C. E. b. m. 246-4): | |
| Bolt in tile..... | 670. 73 |
| Cap on pipe..... | 674. 70 |
| Island No. 23, at head of, on property of Thomas Colleshan and about 100 meters up river from his house, about 40 meters back from bank of river, at edge of cultivated field, by fence, 15-inch ash tree blazed 47° 51' distant 14.6 meters; 10-inch ash tree blazed 96° 21' distant 2.8 meters; tile and iron pipe (U. S. C. E. b. m. 247-3): | |
| Bolt in tile..... | 670. 31 |
| Cap on pipe..... | 674. 31 |
| Island No. 23, at head of, in first bunch of ash timber in line from river, timber averages about 5 inches in diameter, 561.0 meters back of 247-3, 12-inch ash tree blazed 40° (mag.) distant 7.4 meters; 6-inch ash blazed 90° (mag.) distant 2.0 meters; 6-inch ash blazed 220° (mag.) distant 5.3 meters; tile and iron pipe (U. S. C. E. b. m. 247-4): | |
| Bolt in tile..... | 669. 89 |
| Cap on pipe..... | 673. 97 |
| Trim Belle River, opposite a point 600 meters above, 15 meters back from right bank of river, at upper end of thick timber, in a bunch of elm trees about 500 meters below a dam, small willows and cottonwoods in front of bench mark, 15-inch elm tree blazed 51° 01' distant 6.0 meters; 24-inch elm blazed 83° 31' distant 10.5 meters; tile and iron pipe (U. S. C. E. b. m. 248-3): | |
| Bolt in tile..... | 673. 54 |
| Cap on pipe..... | 677. 53 |
| Trim Belle River, about 500 meters above mouth of, 468.4 meters back of 248-3, in small maple trees, a 30-inch elm also a group of ash trees stand near bench mark, 10-inch ash blazed 330° (mag.) distant 11.0 meters, 30-inch elm blazed 135° (mag.) distant 20.5 meters; tile and iron pipe (U. S. C. E. b. m. 248-4): | |
| Bolt in tile..... | 670. 66 |
| Cap on pipe..... | 674. 63 |
| Diamond Bluff, Wis., about 1 mile above and opposite, 80 meters above upper wing dam on right bank, 20 meters back from river bank, in root of 16-inch cottonwood tree; wire nail (U. S. C. E. t. b. m. 83 R. B.).... | 677. 58 |
| Diamond Bluff, Wis., about 2½ miles above, on right bank and on west bank of slough, 30 meters south of wire fence which crosses slough, about 125 meters back from river, small willows stand in front of bench mark, | |

opposite a point about 125 meters up from foot of small willows, 12-inch ash tree blazed 322° 11' distant 7.0 meters; 18-inch elm tree blazed 121° 11' distant 3.3 meters; 15-inch ash blazed 166° 41' distant 3.3 meters; tile and pipe (U. S. C. E. b. m. 249-3):

Bolt in tile..... Feet. 674. 14

Cap on pipe..... 678. 13

Diamond Bluff, Wis., about 2½ miles above, 428.8 meters back from 249-3, 8 meters west of a wire fence, in timber about 75 meters from edge, 15-inch maple tree blazed 00° (mag.) distant 6.0 meters; 10-inch elm tree blazed 230° (mag.) distant 4.0 meters; tile and iron pipe (U. S. C. E. b. m. 249-4):

Bolt in tile..... 672. 22

Cap on pipe..... 676. 19

Big River, 300 meters above, on right bank about 40 meters back from bank of river, back of small willows, 150 meters above upper end of revetment which is at lower end of small willows, near a 6-foot cottonwood tree blazed 244° 02' distant 8.6 meters; 18-inch elm tree blazed 88° 02' distant 4.1 meters; tile and iron pipe (U. S. C. E. b. m. 250-3):

Bolt in tile..... 681. 85

Cap on pipe..... 677. 90

Big River, 300 meters above, 610.2 meters back of 250-3, by fence between prairie and timber, at edge of timber, 30-inch elm tree blazed 285° (mag.) distant 18.5 meters; 8-inch ash blazed 145° (mag.) distant 15.9 meters; tile and iron pipe (U. S. C. E. b. m. 250-4):

Bolt in tile..... 673. 80

Cap on pipe..... 677. 78

CANNON FALLS QUADRANGLE.

[Latitude, 44° 30'-44° 45'; longitude, 92° 45'-93°.]

Along Mississippi River.

Island No. 20, at head of, 40 meters back from right river bank, by a fence, opposite head of slough which empties into Vermillion River, on property of G. K. Bye, yellow frame house 330° distant 20 meters; 24-inch elm tree blazed 229° 14' distant 16.8 meters; tile and iron pipe (U. S. C. E. b. m. 251-3):

Bolt in tile..... 680. 30

Cap on pipe..... 684. 27

Island No. 20, at head of, on property of Edward Morris, 50 meters in front of edge of timber, 0.5 meter east of north-south fence, 133 meters south of corner of fence, a large elm tree stands west of bench mark, 36-inch elm blazed 83° 18' distant 20.4 meters; 18-inch elm blazed 3° 18' distant 28.8 meters; tile and iron pipe (U. S. C. E. b. m. 251-4):

Bolt in tile..... 674. 90

Cap on pipe..... 678. 87

Prescott Island, 150 meters below head of, on right bank about 40 meters back from bank of chute, in small pasture 0.5 meter east of wire fence, on property of Ernest Beranek and 125 meters below his house, 12-inch willow tree blazed 177° 19' distant 4.7 meters; tile and iron pipe (U. S. C. E. b. m. 252-3):

Bolt in tile..... 680. 30

Cap on pipe..... 684. 27

Prescott Island, 150 meters below head of, in pasture on terrace, about 50 meters back from edge and 210 meters south of a wagon road which runs west from river, 1 meter east from north-south wire fence, 10-inch elm tree blazed 299° 03' distant 12.3 meters; 9-inch hackberry tree blazed 337° 18' distant 16.4 meters; tile and iron pipe (U. S. C. E. b. m. 252-4):

Bolt in tile..... Feet. 693.52

Cap on pipe..... 697.49

Hastings, high water mark 1870..... 689.19

Hastings, high water mark 1880..... 687.16

Hastings, high water mark 1897..... 687.38

LAKE ELMO QUADRANGLE.

[Latitude, 44° 45'-45°; longitude, 92° 45'-93°.]

Along Mississippi River.

Hastings, about 0.5 mile above north approach of wagon bridge at, 200 meters below crossing of Chicago, Milwaukee & St. Paul Ry. and Chicago, Burlington & Quincy R. R., 1 meter south of south right of way fence of first-named road, 125 meters above a wagon-road crossing, 10-inch box-elder tree blazed 330° 42' distant 41.1 meters; tile and iron pipe (U. S. C. E. b. m. 253-2):

Bolt in tile..... 685.15

Cap on pipe..... 689.10

Hastings, about 0.5 mile above north approach of wagon bridge at, on right bank, in open ground 20 meters back from bank of river, a well preserved 18-inch elm stump stands in line with 253-2 and 253-3 about 5 meters back from bank of river, above a wire fence and upper end of cultivated field, 150 meters below small clump of willows on bank, 18-inch elm stump 227° 15' distant 15.4 meters; tile and iron pipe (U. S. C. E. b. m. 253-3):

Bolt in tile..... 679.84

Cap on pipe..... 683.82

Hastings, 0.75 mile above wagon bridge, 8 meters down river from line of fence prolonged, 200 meters above wagon bridge crossing slough, on north side of bluff, 1 meter south of wire fence, 15 meters back from slough, 10-inch oak tree blazed 344° 48' distant 1.5 meters; 10-inch oak blazed 117° 18' distant 9.3 meters; tile and iron pipe (U. S. C. E. b. m. 253-4):

Bolt in tile..... 695.26

Cap on pipe..... 699.23

Island No. 18, 6 meters from bank of Nininger slough, at lower end of large maple tree, 846.9 meters back from 254-2, 6-inch maple blazed 50° (mag.) distant 7.8 meters; 15-inch maple blazed 100° (mag.) distant 13.8 meters; tile and iron pipe (U. S. C. E. b. m. 254-1):

Bolt in tile..... 679.63

Cap on pipe..... 683.59

Island No. 18, 40 meters back from bank of river, on high ground, 20 meters upstream from dam, dam is opposite and almost in line with wagon road that runs from river up through Nininger, 12-inch blazed elm tree 347° 11' distant 14.5 meters; tile and iron pipe (U. S. C. E. b. m. 254-2):

Bolt in tile..... 680.35

Cap on pipe..... 684.32

| | |
|--|-----------------|
| Island No. 18, at foot of bluff on right bank, 12 meters upstream from west line of road which runs from river up through Nininger, 10 meters downstream from a cave in perpendicular cliff, 4-inch elm tree blazed 320° (mag.) distant 3 meters; tile and iron pipe (U. S. C. E. b. m. 254-3): | |
| Bolt in tile..... | Feet. 687.54 |
| Cap on pipe..... | 691.51 |
| Boulanger slough, 600 meters above head of, by an east-west wire fence marking south line of property of John Benson, fence is on section line, in cultivated field, southwest corner of sec. 32, T. 27, R. 21, 90° distant 463.3 meters; tile and iron pipe (U. S. C. E. b. m. 255-1): | |
| Bolt in tile..... | 696.28 |
| Cap on pipe..... | 700.25 |
| Boulanger slough, 600 meters above head of, on left bank, 10 meters back from edge, in open ground, 100 meters above timber and 100 meters below clump of large elm trees, 8 meters below line of dike, 24-inch elm tree blazed 37° 17' distant 10.5 meters; tile and iron pipe (U. S. C. E. b. m. 255-2): | |
| Bolt in tile..... | 684.00 |
| Cap on pipe..... | 687.97 |
| Boulanger slough, about 600 meters above head of, opposite upper end of timber on left bank, on narrow ridge running parallel with river, 37 meters from right bank of river, in heavy elm and maple timber, 24-inch elm tree blazed 173° 01' distant 6.8 meters; 15-inch maple blazed 275° 26' distant 7.0 meters; tile and iron pipe (U. S. C. E. b. m. 255-3): | |
| Bolt in tile..... | 682.24 |
| Cap on pipe..... | 686.23 |
| Boulanger slough, about 600 meters above head of, 2 feet above ground in low swampy land, 526.6 meters back from 255-3, 230 meters back from wagon road, 150 meters south and 50 meters west from northwest corner of fence inclosing partly cleared timber lot, 4-inch maple tree blazed 175° (mag.) distant 11.0 meters; tile and iron pipe (U. S. C. E. b. m. 255-4): | |
| Bolt in tile..... | 680.32 |
| Cap on pipe..... | 684.42 |

ST. PAUL QUADRANGLE.

[Latitude, 44° 45'-46°; longitude, 93°-93° 15'.]

Along Mississippi River.

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|---|--------|
| Pine Bend landing, 300 meters below, 534.2 meters back from 256-2, in timber, 20-inch elm tree blazed 42° (mag.) distant 1.7 meters; 18-inch elm blazed 180° (mag.) distant 2.0 meters; 20-inch elm blazed 250° (mag.) distant 1.5 meters; tile and iron pipe (U. S. C. E. b. m. 256-1): | |
| Bolt in tile..... | 684.12 |
| Cap on pipe..... | 688.09 |
| Grey Cloud Island, about 75 meters back from bank of river, at edge of heavy timber, 5 meters upstream from an old wagon road, in line with wing dam which is opposite a point 300 meters below Pine Bend landing, 10-inch cottonwood tree 178° 16' distant 6 meters; 18-inch cottonwood 181° 46' distant 4.2 meters; tile and iron pipe (U. S. C. E. b. m. 256-2): | |
| Bolt in tile..... | 688.95 |
| Cap on pipe..... | 692.92 |

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|---|------------------|
| Pine Bend landing, 300 meters below, about 5 meters back from highest point of bank, 100 meters below ruins of rock foundation which stand on bank of river, 160 meters below a small running stream, 15-inch cottonwood tree blazed 246° 45' distant 7.0 meters; 24-inch cottonwood blazed 163° 15' distant 18.5 meters; 18-inch cottonwood blazed 304° 15' distant 17.0 meters; tile and iron pipe (U. S. C. E. b. m. 256-3): | |
| Bolt in tile..... | Feet. 686. 10 |
| Cap on pipe..... | 690. 07 |
| Newport , 3 miles below, at fork of Grey Cloud road, 1 mile below Pullman Avenue, 400 meters north of bridge over Grey Cloud slough, 1 meter east of west fence of branch of road running to bridge, 4 meters south of angle and 6 meters north of gate in same fence; tile and iron pipe (U. S. C. E. b. m. 257-1): | |
| Bolt in tile..... | 748. 25 |
| Cap on pipe..... | 752. 21 |
| Grey Cloud slough, 40 meters above and 125 meters from its head, 5 meters back of edge of sand terrace, 100 meters from river bank, 18-inch elm tree blazed 50° 25' distant 12 meters; 8-inch burr-oak blazed 187° 55' distant 8 meters; tile and iron pipe (U. S. C. E. b. m. 257-2): | |
| Bolt in tile..... | 692. 55 |
| Cap on pipe..... | 696. 52 |
| Newport , 3 miles below, at head of Grey Cloud slough, on right bank back from willow towhead 20 meters from slough in timber and 5 meters below a dam, 30-inch ash tree blazed 42° 11' distant 9 meters; to 30-inch cottonwood blazed 92° 11' distant 9.5 meters; tile and iron pipe (U. S. C. E. b. m. 257-3): | |
| Bolt in tile..... | 688. 60 |
| Cap on pipe..... | 692. 57 |
| Newport , 3 miles below, at head of Grey Cloud slough, 409 meters back of 257-3 and 20 meters back of slough, 200 meters above lower end of slough, between slough and wagon road, 150 meters east of Chicago Great Western R. R.; tile and iron pipe (U. S. C. E. b. m. 257-4): | |
| Bolt in tile..... | 713. 68 |
| Cap on pipe..... | 717. 65 |
| Newport , about 1 mile below St. Paul Park bridge, at edge of sand terrace, near end of spur siding and about 30 feet east of track, 200 feet north of ruins of large brick building; highest point on boulder (U. S. C. E. t. b. m. 70 L. B.)..... | |
| | 733. 60 |
| Newport , at lower end of, 500 meters above railroad bridge at St. Paul Park, on left bank, 180 meters back of railroad track, 1 meter south of an east-west fence at corner of cultivated field, 40 meters east of angle in fence; fence is south line of a street in lower end of Newport which runs by a platform station of Chicago, Burlington & Quincy R. R. and crosses Chicago, Milwaukee & St. Paul Ry. 100 meters below a signboard "1500 feet to station," 775.2 meters back of bench mark 258-2; tile and iron pipe (U. S. C. E. b. m. 258-1): | |
| Bolt in tile..... | 771. 77 |
| Cap on pipe..... | 775. 72 |
| Newport , at lower end of, on right of way of Chicago, Burlington & Quincy R. R. branch which runs to bridge at St. Paul Park, 7 meters east of center of track, large two-story white frame house 312° 01' distant 43.2 meters; 10-inch elm tree blazed 161° 16' distant 28.0 meters; tile and iron pipe (U. S. C. E. b. m. 258-2): | |
| Bolt in tile..... | 740. 37 |
| Cap on pipe..... | 744. 34 |

Newport Island, 500 meters above railroad bridge at St. Paul Park, 5 meters back from right bank of river, 8 meters below wing dam which is first below warehouse at Newport on opposite side of river, 12-inch elm tree blazed $309^{\circ} 16'$ distant 4.9 meters; 6-inch box-elder blazed $245^{\circ} 48'$ distant 6.2 meters; 10-inch elm blazed $126^{\circ} 48'$ distant 3.5 meters; tile and iron pipe (U. S. C. E. b. m. 258-3):

Bolt in tile.....

Cap on pipe.....

Invergrove railroad station, about 500 meters above, 0.5 meter west of west right of way fence of Chicago Great Western R. R., 20 meters above upper end of a fill, 35 meters above north line of wall of brick house; tile and iron pipe (U. S. C. E. b. m. 258-4):

Bolt in tile.....

Cap on pipe.....

South St. Paul, on high ground in weeds, 852.9 meters back of 259-2, 150 meters north of a small grove of large trees in hay field, 6-inch double ash tree 130° (mag.) distant 7.7 meters; tile and iron pipe (U. S. C. E. b. m. 259-1):

Bolt in tile.....

Cap on pipe.....

South St. Paul, on opposite side of river, 50 meters below a wing dam on left bank, which is first dam above upper icehouse on left bank, 30 meters back from water's edge, on highest part of bank and 1 meter toward river from a wire fence, 24-inch elm tree blazed $276^{\circ} 41'$ distant 2 meters; 10-inch elm blazed $149^{\circ} 11'$ distant 5.5 meters; tile and iron pipe (U. S. C. E. b. m. 259-2):

Bolt in tile.....

Cap on pipe.....

South St. Paul, on right bank 1 meter back from top of revetted bank and on levee, 62 meters above upper icehouse and $52\frac{1}{2}$ meters above ice chute, corner of icehouse $332^{\circ} 41'$ distant 62.5 meters; tile and iron pipe (U. S. C. E. b. m. 259-3):

Bolt in tile.....

Cap on pipe.....

St. Paul, 2 miles below lower bridge, 0.5 mile below Dayton Bluff, back of 260-2, in pasture, 40 meters toward river from railroad track, 24-inch willow tree blazed $67^{\circ} 58'$ distant 28.8 meters; 18-inch willow blazed $114^{\circ} 13'$ distant 13.8 meters; 30-inch elm blazed $265^{\circ} 28'$ distant 24.4 meters; tile and iron pipe (U. S. C. E. b. m. 260-1):

Bolt in tile.....

Cap on pipe.....

Dayton Bluff, about 0.5 mile below lower end of, on top of left bank, about 25 meters above a small dry slough, at edge of timber, 5 meters back of a Government stone with square top, 4 meters from a Government light, 15-inch willow tree blazed $262^{\circ} 00'$ distant 7.1 meters; tile and iron pipe (U. S. C. E. b. m. 260-2):

Bolt in tile.....

Cap on pipe.....

Dayton Bluff, about 0.5 mile below lower end of, back from 260-3, at edge of scattered willows and 75 meters upstream from a wire fence, 6-inch double ash tree $27^{\circ} 02'$ distant 1.7 meters; 6-inch double willow $173^{\circ} 17'$ distant 13.7 meters; 18-inch willow $284^{\circ} 02'$ distant 39.3 meters; tile and iron pipe (U. S. C. E. b. m. 260-4):

Bolt in tile.....

Cap on pipe.....

| | |
|--|---------|
| St. Paul, on left bank, under high bridge, between third pair of piers back from river, 1.44 meters from southeast corner of west pier and 2.1 meters from northeast corner of same pier; tile and iron pipe (U. S. C. E. b. m. 261-2): | |
| Bolt in tile..... | 699. 29 |
| Cap on pipe..... | 703. 26 |
| St. Paul, on right bank under high bridge, northwest of southeast one of four piers, northwest corner of said pier 295° 35' distant 1.2 meters; tile and iron pipe (U. S. C. E. b. m. 261-3): | |
| Bolt in tile..... | 701. 27 |
| Cap on pipe..... | 705. 25 |
| St. Paul, at northeast corner of Seventh and Chestnut streets, on water table, elevation city datum 84.73 (St. Paul City b. m. 1203)..... | |
| | 779. 25 |
| St. Paul, on right bank of river, at northeast corner of Fillmore and Sharkey streets, on water table, elevation city datum 14.21 (St. Paul City b. m. 1132)..... | |
| | 708. 80 |
| St. Paul, at northwest corner of View and Seventh streets, on square corner of catch basin, elevation city datum 92.53 (St. Paul City b. m. 1312)... | |
| | 787. 04 |
| St. Paul, at northeast corner of East Seventh and Sibley streets, on water table, elevation city datum 66.81 (St. Paul City b. m. 1238)..... | |
| | 761. 33 |
| St. Paul, at Union Station; base of rail..... | |
| | 705. 48 |
| St. Paul, high-water mark 1881..... | |
| | 703. 82 |
| St. Paul, high-water mark 1887..... | |
| | 702. 61 |
| St. Paul, at foot of Jackson Street, U. S. gage, section nailed to piling reads up to 20 feet; elevation of zero..... | |
| | 684. 16 |
| St. Paul, 3 miles above high bridge, 0.25 mile below lower end of Pike Island, back of 262-2, about 50 meters toward river from foot of bluff, upper one of two small frame houses stands 54 meters northeast of bench mark, 15-inch willow tree blazed 85° 05' distant 4.7 meters; 10-inch willow blazed 269° 35' distant 24.6 meters; southeast corner of house 224° 05' distant 54.7 meters; tile and iron pipe (U. S. C. E. b. m. 262-1): | |
| Bolt in tile..... | 693. 10 |
| Cap on pipe..... | 697. 10 |
| St. Paul, 3 miles above high bridge, 0.25 mile below lower end of Pike Island, on left bank, 50 meters back from bank of river, at edge of cultivated ground and timber, 23 meters down river from a pair of 36-inch elm trees 1 meter apart which stand in cultivated field 10 meters back from edge of timber, 36-inch elm blazed 59° 17' distant 23.2 meters; 36-inch elm blazed 136° 17' distant 35.2 meters; 12-inch ash blazed 329° 47' distant 7.4 meters; tile and iron pipe (U. S. C. E. b. m. 262-2): | |
| Bolt in tile..... | 699. 87 |
| Cap on pipe..... | 703. 85 |
| St. Paul, 3 miles above high bridge, 0.25 mile below lower end of Pike Island, on right bank, 50 meters below a spring, a path leads from river to railroad track 5 meters above bench mark, opposite fifth bulldog pier below foot of Pike Island, 4 meters back from river, 6-inch cottonwood tree blazed 110° 33' distant 2.2 meters; 12-inch cottonwood blazed 44° 48' distant 9.7 meters; tile and iron pipe (U. S. C. E. b. m. 262-3): | |
| Bolt in tile..... | 695. 06 |
| Cap on pipe..... | 699. 03 |

| | |
|--|---------|
| St. Paul, on Fort Snelling Reservation, on top of bluff, 5 meters from edge, station is on prolongation of line along southeast side of Bloomington road, in grass 20 meters northeast of garden patch, outside of two small stone buildings; tile and pipe (Triangulation front base): | |
| Bolt in tile..... | 807. 14 |
| Cap on pipe..... | 811. 12 |
| St. Paul, on Fort Snelling Reservation, 3 meters east of Bloomington road, opposite end of embankment in rifle range, 100 meters back of square tower on west side of road, about 1,500 meters back of end of Bloomington road near crest of bluffs; tile and iron pipe (Triangulation back base): | |
| Bolt in tile..... | 812. 30 |
| Cap on pipe..... | 816. 26 |
| St. Paul, in vicinity of southwest corner of reservation, at crest of bluff; square cut monument (Sun dial post)..... | |
| | 876. 51 |
| St. Paul, 0.5 mile below Soldiers' Home, on left bank at foot of bluffs, at edge of grass field and timber, 200 meters back from river, 150 meters above lower end of grass field, 6-inch basswood tree blazed 240° 03' distant 2 meters; 8-inch oak blazed 239° 03' distant 6.8 meters; tile and iron pipe (U. S. C. E. b. m. 263-2): | |
| Bolt in tile..... | 703. 07 |
| Cap on pipe..... | 707. 04 |
| St. Paul, 0.5 mile below Soldiers' Home, on right bank, 200 meters below foot of island the head of which is opposite Soldiers' Home, on high bluff bank 25 meters back from edge and 30 meters upstream from a small cabin which stands at foot of bluff bank where same leaves river, 4-inch linn tree blazed 218° 12' distant 10.5 meters; 6-inch ash blazed 294° 57' distant 4.2 meters; 9-inch elm blazed 345° 57' distant 12.4 meters; tile and iron pipe (U. S. C. E. b. m. 263-3): | |
| Bolt in tile..... | 725. 99 |
| Cap on pipe..... | 729. 97 |

MINNEAPOLIS QUADRANGLE.

[Latitude, 44° 45'-45°; longitude, 93° 15'-93° 30'.]

Along Mississippi River.

| | |
|---|---------|
| Minneapolis, in lower part of, 0.5 meter north of south line of Marshall Street, 23 meters east of east end of Lake Street bridge, 264-3 90° 59' distant 394 meters; blazed trees: 15-inch oak, 36° 10' distant 12.9 meters; 18-inch basswood, 331° 40' distant 13.6 meters; 12-inch oak, 306° 40' distant 9.1 meters; tile and pipe (U. S. C. E. b. m. 264-2): | |
| Bolt in tile..... | 819. 19 |
| Cap on pipe..... | 823. 19 |
| Minneapolis, in lower part of, on right bank, 17 meters toward river from west abutment of Lake Street bridge, in line with pair of iron posts third from abutment, 6 meters from the south post; tile and pipe (U. S. C. E. b. m. 264-3): | |
| Bolt in tile..... | 791. 40 |
| Cap on pipe..... | 795. 18 |
| Minneapolis, on west abutment of Lake Street bridge; "U. □ S." (U. S. C. E. b. m. 1)..... | |
| | 815. 48 |
| Minneapolis, Thirty-fourth Street and Tenth Avenue South (Triangulation powder horn): | |
| Bolt in tile..... | 863. 45 |
| Cap on pipe..... | 867. 5 |
| City datum of Minneapolis..... | 710. 75 |

| | |
|--|----------|
| Minneapolis , in southeast part, near right of way of Great Northern Ry., 200 meters below east end of bridge; tile and pipe (U. S. C. E. p. b. m. 265-2): | Feet. |
| Bolt in tile..... | 794. 001 |
| Cap on pipe..... | 797. 981 |
| Minneapolis , at Twentieth Avenue South, in rock abutment of Northern Pacific Ry. bridge, on river end of abutment, in next to top stepping- stone; copper bolt leaded vertically marked "U. O. S." (U. S. C. E. b. m. 265-3)..... | 815. 42 |
| Minneapolis Union Station; base of rail..... | 813. 72 |
| Minneapolis , east end of Chicago, Milwaukee & St. Paul Ry. bridge; base of rail..... | 840. 97 |
| Minneapolis , west end of Northern Pacific Ry. bridge; base of rail..... | 818. 03 |
| Minneapolis , east end of Stone Arch bridge; base of rail..... | 804. 78 |
| Minneapolis , east end of Great Northern Ry. bridge; base of rail..... | 826. 57 |
| Minneapolis , northeast, near Windom Park (Triangulation Windom): | |
| Bolt in tile..... | 952. 13 |
| Cap on pipe..... | 956. 11 |

ANOKA QUADRANGLE.

[Latitude, 45°-45° 15'; longitude, 93° 15'-93° 30'.]

Along Mississippi River.

| | |
|---|----------|
| Minneapolis , northeast, on top of left bank of river at Twenty-seventh Avenue (U. S. C. E. p. b. m. 266-2): | |
| Bolt in tile..... | 829. 962 |
| Cap on pipe..... | 833. 95 |
| Minneapolis , on center line of Thirty-fourth Street North, on property be- longing to Nelson Reeves, about 43 meters back from bank of river, 0.25 meter north of an east-west fence; tile and pipe (U. S. C. E. b. m. 266-3): | |
| Bolt in tile..... | 817. 03 |
| Cap on pipe..... | 821. 04 |
| Minneapolis , on top of ridge, on Thirty-sixth Avenue North; tile and pipe (U. S. C. E. b. m. Triangulation Peck): | |
| Bolt in tile..... | 937. 45 |
| Cap on pipe..... | 941. 45 |
| Minneapolis , on top of right bank, on property belonging to J. D. Taylor and 60 meters northeast of Taylor's barn, about 75 meters east of public road, 267-2 280° 09' distant 352 meters; to blazed trees: 18-inch oak, 5° 40' distant 18.2 meters; 10-inch oak, 207° 25' distant 12 meters; 10- inch oak, 160° 55' distant 18.8 meters; tile and pipe (U. S. C. E. b. m. 267-3): | |
| Bolt in tile..... | 823. 50 |
| Cap on pipe..... | 827. 51 |
| Minneapolis , 480 meters north of Warwick post office, 400 meters from river, 0.5 meter southwest of corner of fence, on property of Thomas Warwick, on west side of public road; tile and pipe (U. S. C. E. b. m. 268-3): | |
| Bolt in tile..... | 840. 39 |
| Cap on pipe..... | 844. 37 |
| Minneapolis , on top of right bank, on property belonging to J. Weaver and 280 meters above his house, 1 meter south of a granite boulder; tile and pipe (U. S. C. E. b. m. 269-3): | |
| Bolt in tile..... | 840. 49 |
| Cap on pipe..... | 844. 48 |

Minneapolis, 255 meters west of right bank of river, on property belonging to C. Peterson, 1.5 meters south of his northeast corner, which is at corner of fence on line between secs. 28 and 33, T. 199 N., R. 21 W., on west side of road, 18-inch oak tree blazed, $219^{\circ} 04'$ distant 7.7 meters; 270-2 $239^{\circ} 55'$; tile and pipe (U. S. C. E. b. m. 270-3):

| | Feet. |
|-------------------|---------|
| Bolt in tile..... | 856. 67 |
| Cap on pipe..... | 860. 63 |

Champlin, 500 meters above bridge, 30 meters back of top of bank, 0.5 meter south of fence on upper line of Frank Johnson's property, at northeast corner of patch of timber, 271-2 $201^{\circ} 36'$ distant 314.6 meters; 15-inch ash tree $328^{\circ} 11'$ distant 4 meters; tile and pipe (U. S. C. E. b. m. 271-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 834. 98 |
| Cap on pipe..... | 838. 94 |

Champlin, 3 miles above, one-fourth mile back of forks of road, on hill; tile and pipe (U. S. C. E. Triangulation Johnson):

| | |
|-------------------|---------|
| Bolt in tile..... | 931. 03 |
| Cap on pipe..... | 935. 01 |

Clouquet Island, 100 meters below foot of, on right bank, on top of high bank, 6.5 meters back of fence running along slope of bank, on grassy spot where bank makes a sharp turn, 272-2 $188^{\circ} 03'$ distant 1,017.8 meters; blazed trees: 10-inch oak, $255^{\circ} 48'$ distant 4.4 meters; 9-inch oak in corner of fence, $155^{\circ} 58'$ distant 7.2 meters; tile and pipe (U. S. C. E. b. m. 272-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 867. 63 |
| Cap on pipe..... | 871. 61 |

Goodwins Island, 100 meters above foot of, on east brow of hill, 70 meters back of chute behind island, 0.5 meter south of wire fence on high grassy knob, on property of Alexander Bouley and Hubert Thibodeau; tile and pipe (U. S. C. E. b. m. (273-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 889. 37 |
| Cap on pipe..... | 893. 33 |

Dayton, about 1 mile above, in edge of timber on high ridge, directly opposite head of Dayton Island; tile and pipe (Triangulation Carrow):

| | |
|-------------------|---------|
| Bolt in tile..... | 930. 83 |
| Cap on pipe..... | 934. 70 |

ELK RIVER QUADRANGLE.

[Latitude, $45^{\circ} 15' - 45^{\circ} 30'$; longitude, $93^{\circ} 30' - 93^{\circ} 45'$.]

Along Mississippi River.

Elk River, 3 miles below, one-fourth mile below Island No. 200, on right bank, on upper end of high ridge, 40 meters back from river, on property of Otove Chouinord, 0.5 meter north of a wire fence running nearly east and west, on sec. 26, T. 21 N., R. 23 W., 274-2 $234^{\circ} 24'$ distant 578.8 meters; highest point on bowlder $178^{\circ} 25'$ distant 6.2 meters; 3-inch basswood tree $77^{\circ} 55'$ distant 5.8 meters; tile and pipe (U. S. C. E. b. m. 274-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 882. 63 |
| Cap on pipe..... | 886. 60 |

Elk River, on right bank opposite lower end of town of, 75 meters from ferry landing, 0.25 meter east of a north-south fence along wagon road running south from ferry, in pasture, 5 meters south of angle in fence, 275-2 $236^{\circ} 49'$ distant 313.9 meters; 18-inch hackberry tree $278^{\circ} 58'$ dis-

tant 10.5 meters; 18-inch ash 226° 48' distant 13.8 meters; 12-inch oak 174° 18' distant 9.7 meters; tile and pipe (U. S. C. E. b. m. 275-3):

Bolt in tile..... 857. 51

Cap on pipe..... 861. 48

Elk River, at Great Northern Ry. station; base of rail..... 894. 17

Elk River, at Northern Pacific Ry. station; base of rail..... 900. 51

Otsago, in east-west street in, 0.5 meter south of wire fence along north line of street, 85 meters south of river, 124 meters east of east line of north-south street running to ferry, 10 meters east of line of east side of church; 276-2 186° 54' distant 441.4 meters; 10-inch blazed poplar tree 307° 00' distant 25.8 meters; tile and pipe (U. S. C. E. b. m. 276-3):

Bolt in tile..... 898. 97

Cap on pipe..... 902. 93

Otsago Ferry, one-half mile above, one-fourth mile below Davis Island, on top of left bank of river; tile and pipe (U. S. C. E. b. m. Triangulation Davis Island):

Bolt in tile..... 904. 39

Cap on pipe..... 908. 36

Otsago, 3 miles above, directly opposite head of Dimmicks Island, on top of high wooded bluff; tile and pipe (U. S. C. E. Triangulation Baker):

Bolt in tile..... 957. 02

Cap on pipe..... 960. 98

Otsago, 3 miles above, about 100 meters above head of Dimmicks Island, on top of right bank, 1 meter west of corner of fence, on property of N. E. Baker, in sec. 11, T. 121 N., R. 24 W., in northeast corner of cultivated field; tile and pipe (U. S. C. E. b. m. 277-3):

Bolt in tile..... 911. 13

Cap on pipe..... 915. 10

Browns Island, 550 meters above head of, 40 meters back from right bank of river, in pasture, 5 meters west of corner of fence, on property of John C. Nelson, sec. 8, T. 121 N., R. 24 W., tile and pipe (U. S. C. E. b. m. 278-3):

Bolt in tile..... 912. 64

Cap on pipe..... 916. 61

BECKER QUADRANGLE.

[Latitude, 45° 15'-45° 30'; longitude, 93° 45'-94°.]

Along Mississippi River.

Monticello, in eastern end of, 130 meters back from old ferry landing on right bank, 0.5 meter east of west line of Washington Street, between First Street and Broadway, 68 meters from Broadway; tile and pipe (U. S. C. E. b. m. 279-3):

Bolt in tile..... 935. 30

Cap on pipe..... 939. 27

Monticello, 2 miles above, 1,000 meters below foot of Lanes Island, in small oak timber on high ridge, 70 meters back from river and about 25 meters above point where ridge leaves river, 440 meters below house on property of N. G. Skarman, on sec. 3, T. 121 N., R. 25 W.; 280-2 234° 56' distant 635.6 meters; 4-inch oak tree 75° 23' distant 2.4 meters; 4-inch oak tree 18° 08' distant 2.6 meters; tile and pipe (U. S. C. E. b. m. 280-3):

Bolt in tile..... 935. 87

Cap on pipe..... 939. 84

Monticello, 5 miles above, one-quarter mile above head of Island No. 163, on right bank, on slope of high ridge near top, 45 meters back from river, about 50 meters above a point opposite upper end of piling which runs from left bank to head of Island No. 163; 281-2 196° 23' distant 1,175.2 meters; blazed trees: 8-inch oak 270° 06' distant 12 meters; 9-inch oak 97° 41' distant 7.7 meters; 12-inch oak 141° 26' distant 9.5 meters; tile and pipe (U. S. C. E. b. m. 281-3):

| | |
|-------------------|------------------|
| Bolt in tile..... | Feet. 954. 19 |
| Cap on pipe..... | 958. 17 |

Bear Island, 40 meters below, on east side of public road, 0.5 meter from north-south fence, 70.3 meters from corner where this fence turns west on east-west road, 300 meters from top of right bank of river, 95 meters south of John Sende's house, sec. 14, T. 122, R. 26; tile and pipe (U. S. C. E. b. m. 282-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 944. 63 |
| Cap on pipe..... | 948. 59 |

Clearwater, 6 miles below, at foot of straight reach where river makes a sharp bend to northeast, about 30 meters back from left bank of river, on high ground, back of large bunch of ash and box-elder trees which stands on bank of river, about 150 meters below lower end of high sand ridge which runs nearly straight for 500 meters, about three-fourths mile below Island No. 158; Triangulation River Bank 340° 55' distant 489.1 meters; blazed trees: 15-inch oak 74° 16' distant 7 meters; 18-inch oak 167° 11' distant 5.6 meters; 12-inch oak 203° 16' distant 6 meters; tile and pipe (U. S. C. E. b. m. 283-2):

| | |
|-------------------|---------|
| Bolt in tile..... | 936. 30 |
| Cap on pipe..... | 940. 28 |

Clearwater, 6 miles below, 150 meters back from right bank of river, on top of high ridge, opposite lower end of straight reach where river makes a sharp bend to northeast; tile and pipe (U. S. C. E. b. m. 283-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 990. 81 |
| Cap on pipe..... | 994. 80 |

CLEARWATER QUADRANGLE.

[Latitude, 45° 15'-45° 30'; longitude, 94°-94° 15'.]

Along Mississippi River.

Clearwater, 3 miles below, on left bank of river, on high bank 7 meters back from edge, half a mile above cut-off, about 50 meters below high sand mound; tile and pipe (U. S. C. E. b. m. 284-2):

| | |
|-------------------|---------|
| Bolt in tile..... | 959. 82 |
| Cap on pipe..... | 963. 78 |

Clearwater, about 3½ miles below, on right bank of river, on top of high bank southeast of old cut-off; tile and pipe (U. S. C. E. b. m. 284-3=Triangulation Benson):

| | |
|-------------------|---------|
| Bolt in tile..... | 985. 06 |
| Cap on pipe..... | 989. 02 |

Clearwater, at Great Northern Ry. station; base of rail..... 962. 45

Clearwater, 280 meters above ferry landing, about 140 meters above mouth of Clearwater Creek, in lot 5, block 11, 60 meters from river and about 20 meters from railroad track, 20 meters from southwest corner of old deserted hotel building, 6 meters from southeast corner of barn; tile and pipe (U. S. C. E. b. m. 285-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 966. 38 |
| Cap on pipe..... | 990. 34 |

Clearwater, about 1 mile above, on right bank of river, in oak timber, 15 meters from top of high bank; tile and pipe (U. S. C. E. b. m.=Triangulation Clearwater):

| | |
|-------------------|-----------------|
| Bolt in tile..... | Feet. 995.88 |
| Cap on pipe..... | 999.83 |

Clearwater, 3 miles above, opposite head of school-section island, 40 meters back from right bank of river, 50 meters below two large elms that stand on high bank, on property of C. T. Rigsby; tile and pipe (U. S. C. E. b. m. 286-3):

| | |
|-------------------|--------|
| Bolt in tile..... | 947.62 |
| Cap on pipe..... | 951.58 |

St. Cloud, about 6 miles below, about 1 mile below point opposite St. Augusta church, 550 meters back from left bank of river, 0.5 meter north of an east-west fence which separates secs. 30 and 31, 60 meters east of junction of fences (north-south and east) on high ridge, on property of George Sheffenberg; tile and pipe (U. S. C. E. b. m. 287-2):

| | |
|-------------------|----------|
| Bolt in tile..... | 1,012.88 |
| Cap on pipe..... | 1,016.85 |

St. Cloud, about 6 miles below, about one-half mile northeast of St. Augusta church, 380 meters below mouth of Johnson Creek, on top of right bank of river; tile and pipe (U. S. C. E. b. m. 287-3=Triangulation St. Augusta):

| | |
|-------------------|----------|
| Bolt in tile..... | 1,011.25 |
| Cap on pipe..... | 1,015.22 |

ST. CLOUD QUADRANGLE.

[Latitude, 45° 30'–45° 45'; longitude, 94°–94° 15'.]

St. Cloud, about 2½ miles below Normal School, about 300 meters below foot of "Thousand Islands," 5 meters back from top of high sand bank on left bank of river, on property of H. Kilian and about 100 meters above his house, opposite head of Island No. 139, 3 meters west of corner of fence; 288–2 239° 00' distant 614.6 meters; blazed trees: 6-inch oak, 270° 19' distant 3.2 meters; 6-inch oak 62° 34' distant 4 meters; 5-inch oak, 11° 49' distant 6.5 meters; tile and pipe (U. S. C. E. b. m. 288-3):

| | |
|-------------------|--------|
| Bolt in tile..... | 985.31 |
| Cap on pipe..... | 989.26 |

St. Cloud, three blocks below upper wagon bridge, 9 meters north of north line of Third Street, on top of right bank of river, about 20 meters back from large pine trees which stand on slope of bank; 289–2 253° 30' distant 272 meters; blazed trees: 15-inch oak, 162° distant 1.2 meters; 9-inch oak, 299° distant 1.3 meters; 18-inch oak, 36° distant 1.6 meters; tile and pipe (U. S. C. E. b. m. 289-3):

| | |
|-------------------|----------|
| Bolt in tile..... | 1,027.50 |
| Cap on pipe..... | 1,031.49 |

St. Cloud, at Great Northern Ry. passenger station; base of rail..... 1,043.2

St. Cloud, at west end of Great Northern Ry. bridge; base of rail..... 1,033.98

East St. Cloud, at Northern Pacific Ry. passenger station; base of rail..... 1,026.6

Sauk Rapids, at Northern Pacific Ry. station; base of rail..... 1,005.3

Sauk Rapids, about 1 mile above, on right bank, 75 meters from river and directly opposite foot of Clark Island, on property of William Connel and 125 meters below his house; tile and pipe (U. S. C. E. b. m. 290-3):

| | |
|-------------------|----------|
| Bolt in tile..... | 1,007.55 |
| Cap on pipe..... | 1,011.53 |

Sauk Rapids, about 4 miles above the town, at foot of Watab Rapids, 5 meters back from top of right bank, 520 meters below foot of Millers Island, on high bank 70 meters below foot of small island, and 20 meters above a small ravine; 291-2 265° 24' distant 330 meters; blazed trees: 5-inch oak 181° distant 2 meters; 6-inch oak 313° distant 5 meters; 6-inch oak 313° distant 5 meters; 6-inch oak 115° distant 6.5 meters; tile and pipe (U. S. C. E. b. m. 291-3):

Bolt in tile..... 1,

Cap on pipe..... 1,

Little Rock, about three-fourths mile below a large granite knob known as, on right bank, 60 meters from river, 0.5 meter east of north-south fence, 65 meters north of corner of fence, opposite foot of slough on opposite side of river, on property of J. S. Stevenson; tile and pipe (U. S. C. E. b. m. 292-3):

Bolt in tile..... 1,

Cap on pipe..... 1,

Rice, about 4½ miles below, on right bank of river, at junction of fences, 320 meters back from river, 900 meters north of schoolhouse "Brockaway No. 7," at northwest corner of patch of timber, about 500 meters below Mr. Gregory's house; 293-2 253° 30' distant 513.7 meters; blazed trees: 24-inch oak, 289° 30' distant 32.5 meters; 20-inch oak, 324° 45' distant 37.4 meters; tile and pipe (U. S. C. E. b. m. 293-3):

Bolt in tile..... 1,

Cap on pipe..... 1,

Rice, about 2 miles south of, on top of river bank, on west side of public road, 8 meters south of section line; tile and pipe (U. S. C. E. b. m. Triangulation river base):

Bolt in tile..... 1,

Cap on pipe..... 1,

Rice, about 1½ miles south of, 30 meters back of right bank of river, nearly south of where road from Rice strikes high bank, about 100 meters above a gravel bar and 600 meters above a large island; 294-2 204° 58' distant 490.2 meters; blazed trees: 18-inch basswood, 228° 54' distant 6 meters; 15-inch basswood, 40° 54' distant 2 meters; 24-inch basswood, 132° 14' distant 18.7 meters; tile and pipe (U. S. C. E. b. m. 294-3):

Bolt in tile..... 1,

Cap on pipe..... 1,

LITTLE FALLS QUADRANGLE.

[Latitude, 45° 48'-46°; longitude, 94° 18'-94° 30'.]

Russells Ferry, 1,000 meters above, 7 meters back from top of bank, on right bank, 250 meters above junction of roads, 180 meters below fence corner on east side of road, in timber; 295-2 283° 16' distant 761.7 meters; blazed trees: 12-inch oak, 354° 30' distant 3.5 meters; 8-inch oak, 86° 30' distant 6.2 meters; 12-inch oak, 163° 45' distant 8 meters; tile and pipe (U. S. C. E. b. m. 295-3):

Bolt in tile..... 1,

Cap on pipe..... 1,

Island No. 88, opposite head of, on river side of public road, 100 meters from water's edge, 0.5 meter south of yard fence and 11 meters west from southeast corner of yard, 10 meters south of house of John Burggroff, jr.; tile and pipe (U. S. C. E. b. m. 296-3):

Bolt in tile..... 1,

Cap on pipe..... 1,

North Prairie ferry, on right bank near landing, on southeast side of road leading to ferry, 50 meters from water's edge, 110 meters southeast of house; 297-2 223° 14' distant 660.5 meters; blazed trees: 15-inch oak stub, 308° 30' distant 9.3 meters; 15-inch oak stub, 47° 45' distant 13.4 meters; tile and pipe (U. S. C. E. b. m. 297-3):

Feet.

Bolt in tile..... 1, 046. 28

Cap on pipe..... 1, 050. 23

Two Rivers bridge, about 1½ miles above, 300 meters back from right bank, 0.25 meter north of an east-west line fence between property of John O. Urbanskie and J. Trask, directly east of Urbanskie's buildings and west of McDougalls Island, 213 meters east of an elm tree which stands in line of fence; tile and pipe (U. S. C. E. b. m. 298-3):

Bolt in tile..... 1, 041. 12

Cap on pipe..... 1, 045. 05

Two Rivers bridge, about ¼ miles above, at lower end of cultivated field on property of Edward F. Cash, 470 meters below his house and about the same distance below Cash's Island, about 20 meters back from right bank of river, at edge of timber; 299-2 245° 48' distant 264.5 meters; 24-inch basswood tree blazed 140° 40' distant 7 meters; tile and pipe (U. S. C. E. b. m. 299-3):

Bolt in tile..... 1, 064. 16

Cap on pipe..... 1, 068. 12

Little Falls, 4 miles below, on right bank, on property of Adam Ligman and 20 meters northeast of his house, on high ridge opposite head of Island No. 64, 70 meters from river, 2 meters north of southwest corner of lot fence, 370 meters above mouth of Swan River; tile and pipe (U. S. C. E. b. m. 300-3):

Bolt in tile..... 1, 095. 50

Cap on pipe..... 1, 099. 47

Little Falls, 1 mile below the dam, on slope of right bank of river, about 15 meters back from water's edge, opposite center of Island No. 59, 10 meters toward river from public road, 145 meters below house of E. Nelson; 301-2 270° 36' distant 794 meters; blazed trees: 18-inch oak, 86° distant 18.4 meters; 10-inch oak, 114° distant 15.4 meters; 12-inch oak, 306° distant 23.8 meters; tile and pipe (U. S. C. E. b. m. 301-3):

Bolt in tile..... 1, 103. 76

Cap on pipe..... 1, 107. 73

Little Falls, upper end of, Northern Pacific Ry. bridge; base of rail 1, 118. 05

Little Falls, 1 mile above upper railway bridge at, on right bank of river, on top of low bank, 15 meters back from water's edge, about 50 meters toward river from wagon road, nearly opposite a junction of wagon roads, about 100 meters upstream from a one-story house, about 350 meters downstream from a large two-story white-brick house; 302-2 272° distant 943.8 meters; blazed trees: 8-inch elm, 229° distant 3.6 meters; 18-inch basswood, 297° 30' distant 5.7 meters; 15-inch oak, 117° distant 5.1 meters; tile and pipe (U. S. C. E. b. m. 302-3):

Bolt in tile..... 1, 107. 10

Cap on pipe..... 1, 111. 08

BELLE PRAIRIE QUADRANGLE.

[Latitude, 46°-46° 15'; longitude, 94° 15'-94° 30'.]

Along Mississippi River.

Little Falls, about 4½ miles above, on right bank of river, about 200 meters above Roscoe Island and almost directly across river from Belle Prairie church, about 150 meters back from river bank, at edge of timber, on property of William Recicot; 303-2 266° 20' distant 939.9 meters; blazed trees: 6-inch poplar, 313° distant 2.7 meters; 12-inch basswood, 46° distant 3.8 meters; tile and pipe (U. S. C. E. b. m. 303-3):

| | Feet. |
|-------------------|------------|
| Bolt in tile..... | 1, 118. 95 |
| Cap on pipe..... | 1, 122. 91 |

Belle Prairie church, 3 miles above, on lower end of sand ridge, 15 meters back from top of right bank, one-half mile above Doucette Island, about 350 meters below Island No. 45, about 200 meters above the upper of two creek on opposite side of river; 304-2 242° 39' distant 1,057.2 meters; blazed trees: 15-inch pine, 188° distant 4.5 meters; 15-inch pine, 327° distant 6.7 meters; 15-inch pine, 76° distant 7 meters; tile and pipe (U. S. C. E. b. m. 304-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 134. 42 |
| Cap on pipe..... | 1, 138. 41 |

Fort Ripley, about 4½ miles below the town, about three-fourths mile above a sharp bend in river which approaches nearest the railroad, on right bank of river, opposite foot of Besau Bar, 315 meters from river, on side of public road next to river, 1 meter west of fence, 25 meters above George Hall's house; 305-2 242° 48' distant 903 meters; blazed trees: 12-inch oak, 337° distant 31.6 meters; 10-inch oak, 49° 27' distant 20.1 meters; tile and pipe (U. S. C. E. b. m. 305-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 140. 48 |
| Cap on pipe..... | 1, 144. 48 |

Pipe Island, 150 meters below foot of, 100 meters back from right bank of river, at angle of fence on east side of public road, on top of high ridge 1½ miles below the old ferry landing, across from county-line road between Morrison and Crow Wing counties; 306-2 271° 02' distant 994.8 meters; blazed trees: 4-inch elm, 24° 30' distant 13.4 meters; 10-inch (double) elm, 85° 12' distant 25 meters; 12-inch basswood, 167° 12' distant 25.1 meters; tile and pipe (U. S. C. E. b. m. 306-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 155. 63 |
| Cap on pipe..... | 1, 151. 66 |

Old Fort Ripley, 600 meters above blockhouse at, 50 meters above ferry landing, in open grassy spot, 30 meters back from right bank, about 100 meters above a point opposite mouth of Nokay Sebie River; 307-2 250° 49' distant 341.1 meters; blazed 9-inch elm tree 42° 10' distant 35.2 meters; tile and pipe (U. S. C. E. b. m. 307-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 144. 94 |
| Cap on pipe..... | 1, 148. 93 |

Old Fort Ripley, 3½ miles above ruins of, on right bank, 11 meters east of wagon road, 20 meters back from river, a lone pine tree stands on hill N. 20° W. about one-half mile distant, a big clump of small pines stands on left bank about 200 meters below; 308-2 279° 24' distant 167.2 meters; blazed 30-inch elm snag 189° distant 6.2 meters; tile and pipe (U. S. C. E. b. m. 308-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 153. 64 |
| Cap on pipe..... | 1, 157. 61 |

Crow Wing River, $2\frac{1}{2}$ miles below lower mouth of, on right bank, on top of a high mound, 25 meters back from river, 100 meters below mouth of a small creek, 500 meters above head of Island No. 22; 309-2 $330^{\circ} 53'$ distant 592.5 meters; blazed trees: 18-inch pine, $314^{\circ} 50'$ distant 36.7 meters; 6-inch pine, 190° distant 9.8 meters; tile and pipe (U. S. C. E. b. m. 309-3):

| | Feet. |
|-------------------|------------|
| Bolt in tile..... | 1, 175. 22 |
| Cap on pipe..... | 1, 179. 18 |

SYLVAN QUADRANGLE.

[Latitude, $46^{\circ} 15'-46^{\circ} 30'$; longitude, $94^{\circ} 15'-94^{\circ} 30'$.]

Along Mississippi River.

Crow Wing River, 750 meters above upper mouth of, 35 meters from Mississippi River, on right bank, on high ground, 40 meters below old Crow Wing ferry landing, on west side of narrowest part of neck of land between Mississippi and Crow Wing rivers; 310-2 $332^{\circ} 40'$ distant 598.5 meters; blazed trees: 10-inch pine, 301° distant 7.6 meters; 8-inch pine, 126° distant 10.1 meters; 12-inch pine, 191° distant 11.5 meters; tile and pipe (U. S. C. E. b. m. 310-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 177. 29 |
| Cap on pipe..... | 1, 181. 28 |

Brainerd, 6 miles below, $3\frac{1}{2}$ miles above upper mouth of Crow Wing River, on right bank, on top of point of high ridge, 70 meters from Mississippi River, about 200 meters south of a small lake and one-fourth mile southeast of head of Big Bass Lake; 311-2 $331^{\circ} 17'$ distant 190.1 meters; blazed trees: 7-inch pine, 103° distant 11.3 meters; 6-inch pine, 265° distant 5.2 meters; 7-inch pine, 24° distant 16 meters; tile and pipe (U. S. C. E. b. m. 311-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 193. 30 |
| Cap on pipe..... | 1, 197. 27 |

BRAINERD QUADRANGLE.

[Latitude, $46^{\circ} 15'-46^{\circ} 30'$; longitude, $94^{\circ}-94^{\circ} 30'$.]

Along Mississippi River.

Brainerd, $3\frac{1}{2}$ miles below railway bridge at, on right bank, on top of ridge, 20 meters back from river, 30 meters below mouth of small ravine which is opposite mouth of Buffalo Creek; 312-2 $325^{\circ} 8'$ distant 210.4 meters; blazed trees: 10-inch jack pine, $290^{\circ} 30'$ distant 6.7 meters; 12-inch jack pine, 354° distant 3.7 meters; 12-inch Norway pine, $146^{\circ} 30'$ distant 32 meters; tile and pipe (U. S. C. E. b. m. 312-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 181. 42 |
| Cap on pipe..... | 1, 185. 39 |

Brainerd, on right bank opposite lower part of, 600 meters below wagon bridge, 50 meters from river, on bench at foot of high ridge, directly in front of a large water tank standing on top of ridge, 16 meters N. 67° W. from northwest corner of barn; 313-2 $260^{\circ} 36'$ distant 390.2 meters; blazed trees: 5-inch jack pine, 24° distant 1 meter; 5-inch jack pine, 152° distant 4.2 meters; tile and pipe (U. S. C. E. b. m. 313-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 193. 72 |
| Cap on pipe..... | 1, 197. 71 |

Brainerd, Northern Pacific Ry. bridge; base of rail..... 1, 211. 75

Brainerd, above dam; high-water mark 1896..... 1, 177. 39

Northeast Brainerd, in center of Mill Street, at east side of Minnesota & International Ry. track, 30 meters north of road leading to dam; tile and pipe (U. S. C. E. b. m. Triangulation North Base):

| | Feet. |
|-------------------|------------|
| Bolt in tile..... | 1, 203. 27 |
| Cap on pipe..... | 1, 207. 25 |

Brainerd, one-fourth mile above dam, on hillside on right bank, 40 meters from river, 20 meters back of railroad track used for dumping logs into river, directly opposite sawmill of Brainerd Lumber Co., 150 meters below small island; tile and pipe (U. S. C. E. b. m. 314-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 213. 66 |
| Cap on pipe..... | 1, 217. 64 |

Brainerd Dam, $3\frac{1}{4}$ miles above, on right bank, and three-fourths mile above the upper end of a narrow stretch of river, on high ground opposite low point of left bank and about 300 meters above a high wooded hill across the river, 140 meters above a bay, 15 meters back from river, $315-2\ 278^\circ$, distant 379 meters; blazed trees: 15-inch jack pine, 88° distant 33 meters; 24-inch Norway pine, 222° distant 7.5 meters; 15-inch jack pine, $295^\circ\ 30'$ distant 11.3 meters; tile and pipe (U. S. C. E. b. m. 315-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 196. 67 |
| Cap on pipe..... | 1, 200. 65 |

Brainerd, 6 miles above north end of, $2\frac{1}{4}$ miles below mouth of Rabbit River, on left bank of the Mississippi, 15 meters from backwater from Brainerd Dam, 200 meters below a thickly wooded point, 250 meters above an island formed by backwater from Brainerd Dam, 275 meters back of original river bank, a prominent wooded hill stands back of bench mark; $316-3\ 139^\circ\ 37'$ distant 635 meters; blazed trees: 8-inch white pine, 37° distant 4 meters; 8-inch jack pine, 97° distant 5.8 meters; 20-inch Norway pine, $215^\circ\ 45'$ distant 31.2 meters; tile and pipe (U. S. C. E. b. m. 316-2):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 176. 88 |
| Cap on pipe..... | 1, 180. 8 |

NOTE.—This bench mark is marked by p. b. m. tile and pipe but was not touched on by precise-level line.

Brainerd, 6 miles above north end of, $2\frac{1}{4}$ miles below mouth of Rabbit River, on right bank of the Mississippi, on downstream side of hilly point which projects to the river between two bays formed by backwater from Brainerd Dam, about 200 meters below extreme end of point, opposite island across river formed by backwater, 40 meters from backwater, $316-2\ 319^\circ\ 37'$ distant 635 meters; 18-inch blazed white-pine tree $317^\circ\ 21'$ distant 33 meters; tile and pipe (U. S. C. E. b. m. 316-3):

| | |
|-------------------|---------|
| Bolt in tile..... | 1, 197. |
| Cap on pipe..... | 1, 201. |

Rabbit River, one-half mile above mouth of, on right bank of the Mississippi, on top of lower end of ridge covered with jack pines, directly opposite small ravine on left bank, 30 meters from river and 10 meters back from top of bank $317-2\ 289^\circ\ 10'$ distant 259.8 meters; blazed trees: 9-inch jack pine, 342° distant 15.1 meters; 9-inch jack pine, 67° distant 2.5 meters; tile and pipe (U. S. C. E. b. m. 317-3):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 216 |
| Cap on pipe..... | 1, 220 |

Rabbit River, $3\frac{1}{4}$ miles above mouth of, on right bank of the Mississippi, 1,000 meters below an old cut-off, on high ridge one-fourth mile back from river, one-half mile south of lake formed by the cut-off and called on old maps, "Half-moon Marsh"; $318-2\ 293^\circ\ 33'$ distant 673 meters;

blazed trees: 30-inch oak, 268° distant 78 meters; 7-inch jack pine, 316° distant 8 meters; 6-inch oak, 386° distant 5.2 meters; tile and pipe (U. S. C. E. b. m. 318-3):

| | Feet. |
|-------------------|------------|
| Bolt in tile..... | 1, 206. 72 |
| Cap on pipe..... | 1, 210. 69 |

CROSS LAKE QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 94°–94° 15'.]

Along Mississippi River.

Dr. Camp's house, which stands on site of old Indian mission, 600 meters above, 75 meters below mouth of slough, on right bank, on ridge 40 meters from river; 319–2 334° 07' distant 227.2 meters; blazed 6-inch oak tree 11° distant 11.7 meters; tile and pipe (U. S. C. E. b. m. 319-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 191. 29 |
| Cap on pipe..... | 1, 195. 26 |

Mission Lake, one-half mile east of, on east side of road, 2 meters north of junction of fence with east-west section line, 600 meters northwest of Dr. Camp's house, which stands on site of old Indian mission; tile and pipe (U. S. C. E. b. m. Triangulation Camp):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 198. 22 |
| Cap on pipe..... | 1, 202. 18 |

Pine River, 1½ miles below mouth of, on right bank of the Mississippi, three-fourths of a mile above Foster's house, 20 meters back from top of bank, on a point where river makes a sharp bend to south, river at bench mark runs southeast; 320–2 233° 37' distant 123.4 meters; blazed trees: 15-inch pine, 205° 50' distant 20.4 meters; 24-inch oak, 4° 16' distant 17.6 meters; 18-inch oak, 78° 46' distant 7.5 meters; tile and pipe (U. S. C. E. b. m. 320-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 184. 77 |
| Cap on pipe..... | 1, 188. 75 |

CUTUNA QUADRANGLE.

[Latitude, 46° 30'–46° 45'; longitude, 93° 45'–94°.]

Along Mississippi River.

Pine River, 2½ miles above, 1 mile below Island Lake, on top of high sand ridge where ridge terminates on river bank, 20 meters back from river, on right bank of the Mississippi, in sec. 32; 321–2 52° 46' distant 126.7 meters; blazed trees: 6-inch Norway pine, 183° distant 19.1 meters; 15-inch jack-pine, 312° 30' distant 22.4 meters; 15-inch Norway pine, 48° 30' distant 7.1 meters; tile and pipe (U. S. C. E. b. m. 321-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 211. 88 |
| Cap on pipe..... | 1, 215. 85 |

Towhead Rapids, three-fourths of a mile below, on right bank, 10 meters back from top of high sand ridge, directly back of where sand ridge strikes river, Big Rabbit Lake is 500 meters distant across river, Indian Lake is 600 meters northwest; 322–2 334° 52' distant 172 meters; blazed trees: 15-inch Norway pine, 272° distant 5.8 meters; 18-inch white pine, 41° distant 18.7 meters; 18-inch Norway pine, 172° distant 2 meters; tile and pipe (U. S. C. E. b. m. 322-3):

| | |
|-------------------|------------|
| Bolt in tile..... | 1, 210. 61 |
| Cap on pipe..... | 1, 214. 59 |

Towhead Rapids, one-fourth mile north of sharp bend in river at, on top of high ground, one-half mile west of mouth of slough just below Surre's ferry; tile and pipe U. S. C. E. b. m. Triangulation Surre):

| | |
|-------------------|-----------|
| Bolt in tile..... | 1, 277. 9 |
| Cap on pipe..... | 1, 281. 9 |

Dean Brook, 2 miles below mouth of, on right bank of the Mississippi, 50 meters above head of Island No. 1 (the only island in the vicinity), 35 meters from river, on a high ridge, the big meadow across river approaches nearest the river at this point; 323-2 320° 32' distant 170.5 meters; blazed trees: 20-inch oak, 279° 27' distant 32.6 meters; 20-inch oak, 353° 17' distant 38.1 meters; 18-inch white pine, 116° 42' distant 26.1 meters; tile and pipe (U. S. C. E. b. m. 323-3):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 204 |
| Cap on pipe..... | 1, 208 |

Dean Brook, one-fourth mile below mouth of, 200 meters back of left bank of the Mississippi, 200 meters south of mouth of small ravine, 60 meters east of ravine, 25 meters east of a line fence; tile and pipe (U. S. C. E. b. m. Triangulation Kemres):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 206 |
| Cap on pipe..... | 1, 210 |

Dean Brook, 1½ miles above, on right bank, 2½ miles below where river makes a sharp bend at Pine Knoll, on high ridge 130 meters back from river, 1½ meters south of a fence and 16 meters below an angle in same fence, on property of George Bund, in sec. 22; 324-2 344° 17' distant 244.6 meters; blazed trees: 15-inch white pine, 292° 55' distant 31 meters; 15-inch oak, 329° 25' distant 53.5 meters; tile and pipe (U. S. C. E. b. m. 324-3):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 207 |
| Cap on pipe..... | 1, 211 |

Pine Knoll, one-fourth mile below small ravine which opens into sharp bend in river at, 75 meters back of top of right bank, on property of James Welton, near his new residence; tile and pipe (U. S. C. E. b. m. Triangulation Pine Knoll):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 204 |
| Cap on pipe..... | 1, 208 |

Aitkin, Northern Pacific Ry. station; base of rail..... 1, 209

Aitkin, 1 mile southeast of, on highest ground on south side of road, 300 meters west of range line; tile and pipe (U. S. C. E. b. m. Triangulation Aitkin):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 263 |
| Cap on pipe..... | 1, 267 |

Wakefield Brook, about 250 meters above mouth of, on right bank, on high ground, 75 meters back from river, on lower bank of low open spot, 50 meters below a point opposite Frank Dotsler's house, trees blazed facing bench mark; tile and pipe (U. S. C. E. b. m. 325-3):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 192 |
| Cap on pipe..... | 1, 196 |

Cedar Brook, about 600 meters above, on right bank of river, opposite 326 2, in timber, 50 meters back from river, trees blazed facing bench mark; tile and pipe (U. S. C. E. b. m. 326-3):

| | |
|-------------------|--------|
| Bolt in tile..... | 1, 195 |
| Cap on pipe..... | 1, 199 |

AITKIN QUADRANGLE.

[Latitude, $46^{\circ} 30' - 46^{\circ} 45'$; longitude, $96^{\circ} 30' - 96^{\circ} 45'$.]

Along Mississippi River.

| | |
|---|------------|
| Aitkin, 3 miles below, on right bank, in timber, 20 meters back from river, about 50 meters above a point opposite Conrad Schwab's house; tile and pipe (U. S. C. E. b. m. 327-3): | |
| Bolt in tile (not leveled to). | Feet. |
| Cap on pipe..... | 1, 201. 81 |
| Aitkin, on right bank, on west side of wagon road leading to wagon bridge over the Mississippi, 40 meters north from north end of bridge approach, 0.5 meter northwest of junction of fences, in William Scriven's yard, 24.6 meters southeast of southeast corner of his house; tile and pipe (U. S. C. E. b. m. 328-3): | |
| Bolt in tile..... | 1, 197. 40 |
| Cap on pipe..... | 1, 201. 39 |

APPENDIX C.

SECONDARY ELEVATIONS.

Water-surface elevations of prominent lakes from records and topographic maps of the United States Geological Survey are given below. The figures are approximate only and should not be used for accurate work.

| Name of lake. | Quadrangle. | County. | Elevation. <i>Feet.</i> |
|------------------------|------------------|------------------------|----------------------------|
| Albert Lake..... | Barrett..... | Douglas..... | 1,255 |
| Amelia Lake..... | White Bear..... | Anoka..... | 906 |
| Annie Battle Lake..... | Battle Lake..... | Otter Tail..... | 1,330 |
| Arnburn Lake..... | Minnetonka..... | Carver..... | 943 |
| Bald Eagle Lake..... | White Bear..... | Ramsey-Washington..... | 910 |
| Barrett Lake..... | Barrett..... | Grant..... | 1,180 |
| Bass Lake..... | Anoka..... | Hennepin..... | 908 |
| Battle Lake..... | Battle Lake..... | Otter Tail..... | 1,333 |
| Bavaria Lake..... | Minnetonka..... | Carver..... | 974 |
| Beebe Lake..... | Rockford..... | Wright..... | 971 |
| Big Lake..... | Herman..... | Grant..... | 1,075 |
| Birch Lake..... | White Bear..... | Ramsey..... | 918 |
| Blackhawk Lake..... | St. Paul..... | Dakota..... | 810 |
| Blanche Lake..... | Battle Lake..... | Otter Tail..... | 1,329 |
| Buchanan Lake..... | do..... | do..... | 1,333 |
| Bunker Lake..... | Anoka..... | Anoka..... | 886 |
| Burr Lake..... | Herman..... | Grant..... | 1,086 |
| Centerville Lake..... | White Bear..... | Anoka..... | 880 |
| Charlotte Lake..... | Rockford..... | Wright..... | 957 |
| Do..... | Morris..... | Stevens..... | 1,135 |
| Chaska Lake..... | Minnetonka..... | Carver..... | 706 |
| Christmas Lake..... | do..... | Carver-Hennepin..... | 925 |
| Clear Lake..... | Chokio..... | Stevens..... | 1,102 |
| Clitherall..... | Battle Lake..... | Otter Tail..... | 1,326 |
| Como Lake..... | St. Paul..... | Ramsey..... | 885 |
| Cormorant Lake..... | Barrett..... | Grant..... | 1,154 |
| Cottonwood Lake..... | Herman..... | Grant-Stevens..... | 1,085 |
| Crooked Lake..... | Anoka..... | Anoka..... | 880 |
| Crystal Bay..... | Minnetonka..... | Hennepin..... | 830 |
| Crystal Lake..... | Morris..... | Stevens..... | 1,115 |
| Cyrus Lake..... | do..... | do..... | 1,119 |
| Davidson Lake..... | Barrett..... | Douglas..... | 1,256 |
| Dead Lake..... | Battle Lake..... | Otter Tail..... | 1,337 |
| Diamond Lake..... | Anoka..... | Rockford-Hennepin..... | 908 |
| Eagle Lake..... | do..... | Hennepin..... | 874 |
| East Battle Lake..... | Battle Lake..... | Otter Tail..... | 1,314 |
| Elde Lake..... | Barrett..... | Grant..... | 1,170 |
| Elk Lake..... | do..... | do..... | 1,223 |
| Ellingson Lake..... | do..... | do..... | 1,211 |
| Fish Lake..... | Chokio..... | Stevens..... | 1,091 |
| Foster Lake..... | Rockford..... | Wright..... | 886 |
| French Lake..... | do..... | Hennepin..... | 908 |
| George Watch Lake..... | White Bear..... | Anoka..... | 880 |
| Gerdert Lake..... | St. Paul..... | Dakota..... | 915 |
| Gervais Lake..... | White Bear..... | Ramsey..... | 858 |
| Gifford Lake..... | Minnetonka..... | Scott..... | 701 |
| Gillfillan Lake..... | White Bear..... | Ramsey..... | 908 |
| Golden Lake..... | do..... | Anoka..... | 889 |
| Goose Lake..... | do..... | Ramsey..... | 821 |

| Name of lake. | Quadrangle. | County. | Elevation. |
|--|-------------------|----------------------|--------------|
| | | | <i>Feet.</i> |
| Gord Lake..... | Chokio..... | Stevens..... | 1,140 |
| Gourd Lake..... | Battle Lake..... | Otter Tail..... | 1,322 |
| Graham Lake..... | Herman..... | Grant..... | 1,067 |
| Grass Lake..... | Anoka..... | Anoka..... | 858 |
| Harry Lake..... | Rockford..... | Hennepin..... | 934 |
| Hattie Lake..... | Chokio..... | Stevens..... | 1,135 |
| Hausman Lake..... | Rockford..... | Hennepin..... | 922 |
| Haseltine Lake..... | Minnetonka..... | Carver..... | 918 |
| Head Lake..... | Battle Lake..... | Otter Tail..... | 1,327 |
| Holland Lake..... | St. Paul..... | Dakota..... | 865 |
| Holstead Bay..... | Minnetonka..... | Hennepin..... | 930 |
| Horneshoe Lake..... | Chokio..... | Stevens..... | 1,129 |
| Huset Lake..... | Barrett..... | Grant..... | 1,121 |
| Independence Lake..... | Rockford..... | Hennepin..... | 958 |
| Island Lake..... | Barrett..... | Grant..... | 1,184 |
| Johnson Lake..... | Herman..... | do..... | 1,099 |
| Jones Lake..... | do..... | do..... | 1,113 |
| Landon Lake..... | Minnetonka..... | Hennepin..... | 933 |
| Long Lake..... | Barrett..... | Grant..... | 1,208 |
| Do..... | Minnetonka..... | Carver..... | 894 |
| Do..... | do..... | Hennepin..... | 945 |
| Do..... | Morris..... | Stevens..... | 1,128 |
| Do..... | White Bear..... | Ramsey..... | 864 |
| Do..... | Battle Lake..... | Otter Tail..... | 1,323 |
| Lower Elk Lake..... | Barrett..... | Grant..... | 1,206 |
| Maple Plain..... | Rockford..... | Hennepin..... | 1,022 |
| Martha Lake..... | do..... | Wright..... | 968 |
| Medicine Lake..... | Anoka..... | Hennepin..... | 887 |
| Messabi Range; highest point in the State yet determined. | Messabi district. | St. Louis..... | 1,920 |
| Miller Lake..... | Minnetonka..... | Carver..... | 917 |
| Minnetonka Lake..... | do..... | Hennepin..... | 930 |
| Minnewashta Lake..... | do..... | Carver..... | 946 |
| Mud Lake..... | Rockford..... | Hennepin..... | 956 |
| Nelson Lake..... | Herman..... | Grant..... | 1,067 |
| Niemaki Lake..... | do..... | do..... | 1,070 |
| Ohlerud Lake..... | do..... | do..... | 1,071 |
| Olson Lake..... | Barrett..... | do..... | 1,062 |
| Otter Tail Lake..... | Battle Lake..... | Ottertail..... | 1,211 |
| Owaseo Lake..... | White Bear..... | Ramsey..... | 1,320 |
| | | | 886 |
| Page Lake..... | Morris..... | Stevens..... | 1,143 |
| Pelican Lake..... | Rockford..... | Wright..... | 953 |
| Peltier Lake..... | White Bear..... | Anoka..... | 880 |
| Perkins Lake..... | Morris..... | Stevens..... | 1,106 |
| Peterson Lake..... | Barrett..... | Grant..... | 1,220 |
| Phalen Lake..... | St. Paul..... | Ramsey..... | 859 |
| Piersons Lake..... | Minnetonka..... | Carver..... | 964 |
| Pomme de Terre Lake..... | Barrett..... | Grant..... | 1,166 |
| Pullman Lake..... | Herman..... | do..... | 1,064 |
| Rebecca Lake..... | Rockford..... | Hennepin..... | 921 |
| Reilly Lake..... | Minnetonka..... | Carver-Hennepin..... | 865 |
| Rehmanaw Lake..... | White Bear..... | Anoka..... | 880 |
| Rice Lake..... | Anoka..... | Hennepin..... | 886 |
| Do..... | Minnetonka..... | Carver-Hennepin..... | 700 |
| Do..... | Rockford..... | Hennepin..... | 964 |
| Do..... | White Bear..... | Anoka..... | 880 |
| Round Lake..... | Anoka..... | do..... | 868 |
| Do..... | Barrett..... | Grant..... | 1,140 |
| Do..... | do..... | do..... | 1,193 |
| Rush Lake..... | Battle Lake..... | Ottertail..... | 1,323 |
| Scandia Lake..... | Morris..... | Stevens..... | 1,141 |
| Sarah Lake..... | Rockford..... | Hennepin..... | 961 |
| Schults Lake..... | Minnetonka..... | Carver..... | 952 |
| Schwappau Lake..... | Rockford..... | Hennepin..... | 1,014 |
| Silver Lake..... | Barrett..... | Grant-Stevens..... | 1,188 |
| Silver Lake..... | Battle Lake..... | Ottertail..... | 1,331 |
| Soiberg Lake..... | do..... | Douglas..... | 1,255 |
| Steele Lake..... | Rockford..... | Wright..... | 972 |
| Steger Lake..... | Minnetonka..... | Carver..... | 947 |
| Stuart Lake..... | Battle Lake..... | Ottertail..... | 1,334 |
| Swank Lake..... | White Bear..... | Ramsey..... | 881 |

| Name of lake. | Quadrangle. | County. | Elevation. |
|----------------------|------------------|----------------|---------------------|
| Superior Lake..... | Duluth..... | St. Louis..... | <i>Feet.</i> 603 |
| Swan Lake..... | Morris..... | Stevens..... | 1,169 |
| Sylvan Lake..... | Rockford..... | Hennepin..... | 935 |
| Thomas Lake..... | St. Paul..... | Dakota..... | 900 |
| Thompson Lake..... | Barrett..... | Grant..... | 1,233 |
| Turtle Lake..... | do..... | do..... | 1,158 |
| Twin Lakes..... | Anoka..... | Hennepin..... | 853 |
| Vadnais Lake..... | White Bear..... | Ramsey..... | 877 |
| Walker Lake..... | Battle Lake..... | Ottertail..... | 1,320 |
| Whale Tail Lake..... | Minnetonka..... | Hennepin..... | 950 |
| Wilhelm Lake..... | Rockford..... | Wright..... | 951 |
| White Bear Lake..... | White Bear..... | Ramsey..... | 933 |
| Worn Lake..... | Barrett..... | Grant..... | 1,158 |
| Zumbra Lake..... | Minnetonka..... | Carver..... | 947 |

INDEX.

| A. | | Page. | | | Page. |
|------------------------------|--|-------------|----------------------------------|-----------------------------------|--------|
| Ada..... | | 149 | Belle Prairie quadrangle..... | 104-106, 176-177 | |
| Ada quadrangle..... | | 149 | Beltrami..... | | 150 |
| Aitkin..... | 55, 56, 57, 58, 59, 67, 75, 109, 110, 180, 181 | | Beltrami County..... | 7, 14, 79 | |
| Aitkin County..... | | 55, 79, 153 | Beltrami quadrangle..... | | 150 |
| Aitkin quadrangle..... | 55-60, 109-111, 181 | | Bemidji..... | 17, 124, 125 | |
| Albany..... | | 127-128 | Bemidji quadrangle..... | 17, 124-125 | |
| Albany quadrangle..... | | 127-128 | Bena..... | | 115 |
| Alberta..... | | 29 | Bena quadrangle..... | 115-116 | |
| Alexandria..... | | 130-131 | Bench marks, description of..... | | 6 |
| Alma..... | | 93 | plate showing..... | | 5 |
| Alma, Wis..... | | 158 | Bennettville..... | | 67, 68 |
| Alma quadrangle..... | | 158 | Benton County..... | 79, 153 | |
| Amor..... | | 25 | Bibbee, E. C., work of..... | 21, 55, 77 | |
| Angus..... | | 151 | Big Fork River..... | | 13 |
| Angus quadrangle..... | | 151 | Big Stone City, S. Dak..... | | 133 |
| Anoka..... | 50, 97, 98 | | Big Stone County..... | | 79 |
| Anoka County..... | 49, 79, 153 | | Birchdale quadrangle..... | 12-13 | |
| Anoka quadrangle..... | 50, 96-98, 169-170 | | Blackberry..... | 113, 114 | |
| Appleton..... | 138-139 | | Black Creek..... | | 12 |
| Aryle..... | | 153 | Black River..... | | 13 |
| Aryle quadrangle..... | | 153 | Borden Creek..... | | 68 |
| Armstrong..... | | 53 | Borden Lake..... | | 68 |
| Ashtab..... | 22, 145-146 | | Borup..... | | 149 |
| Ashtab quadrangle..... | 21-23, 145-146 | | Boyd quadrangle..... | 139-140 | |
| Averill..... | | 148 | Brainerd..... | 60, 61, 62, 63, 106, 107, 177-178 | |
| Avon..... | | 127 | Brainerd quadrangle..... | 60-64, 106-108, 177-179 | |
| Axel quadrangle..... | | 132 | Brandon..... | 131, 132 | |
| B. | | | Breckenridge..... | | 55 |
| Beckus..... | | 120 | Breezy Point..... | | 51 |
| Beckus quadrangle..... | 120-121 | | Brooklyn..... | | 50 |
| Badger..... | | 10 | Browns Hill..... | | 82 |
| Badger Creek..... | | 10 | Brownsville..... | 154, 155 | |
| Badger quadrangle..... | | 10 | Bucher, H., work of..... | | 50 |
| Bagley quadrangle..... | | 20 | Bucks Mills..... | | 32 |
| Bald Eagle Junction..... | | 84 | Buena Vista quadrangle..... | | 18 |
| Ball Club..... | | 116 | Burwell..... | | 8 |
| Belmoral..... | | 28 | Buschville..... | | 53 |
| Bandili, E. M., work of..... | | 52 | C. | | |
| Barnesville..... | 147-148 | | Campbell Lake..... | | 18 |
| Barnesville quadrangle..... | 23, 147-148 | | Campbell quadrangle..... | | 133 |
| Barnum..... | | 81 | Canadian Northern Ry..... | | 12 |
| Barrett..... | | 24 | Cannon Falls quadrangle..... | 162-163 | |
| Barrett quadrangle..... | 24-25, 132-133 | | Carlisle..... | | 147 |
| Battle Lake..... | 25, 27 | | Carlton..... | | 80 |
| Battle Lake quadrangle..... | 25-28 | | Carlton County..... | | 79 |
| Battle River..... | | 19 | Carlton quadrangle..... | | 80 |
| Bandette..... | | 12 | Carmel..... | | 16 |
| Bandette quadrangle..... | | 12 | Carver..... | 82, 145 | |
| Bay City, Wis..... | | 160 | Carver County..... | | 80 |
| Bay Lake..... | | 66 | Cass County..... | | 79 |
| Becker quadrangle..... | 171-172 | | Cass Lake..... | 123, 124 | |
| Beckler, C. B., work of..... | | 21 | Cass Lake quadrangle..... | 123-124 | |
| Belle Prairie..... | 104, 105, 176 | | Cedarbend..... | | 11 |

| | Page. | | Page. |
|--|---------------------|-------------------------------------|---------------------|
| Cedar Lake..... | 67 | Dent..... | 30, 43, 44 |
| Center City..... | 54 | Detroit Lake quadrangle..... | 30-30 |
| Center City quadrangle..... | 54, 53 | Diamond Bluff, Wis..... | 161-162 |
| Centerville..... | 49, 53 | Domas..... | 19 |
| Central Point..... | 90 | Donnelly..... | 28 |
| Champlin..... | 170 | Dorris, old..... | 67 |
| Chanhassen..... | 51 | Douglas, E. M., work of..... | 5 |
| Chaska..... | 52 | Douglas County..... | 79 |
| Chicago & Northwestern Ry..... | 93, 144 | Dawner..... | 143 |
| Chicago, Burlington & Quincy R. R..... | 86, 87, | Dresbach..... | 95, 155 |
| 88, 93, 157, 158, 165 | | Duluth..... | 77, 78, 79 |
| Chicago, Milwaukee & St. Paul Ry..... | 51, 52, | Duluth, Mesabi & Northern R. R..... | 73 |
| 84, 86, 87, 88, 91, 92, 94, 95, 96, 134, 135, | | Duluth quadrangle..... | 77-78, 79 |
| 136, 154, 155, 160, 157, 158, 159, 160, 169 | | Dumont..... | 135 |
| Chicago, St. Paul, Minneapolis & Omaha Ry..... | 145 | Dykeman..... | 66 |
| Childs..... | 134 | | |
| Chippewa County..... | 79 | E..... | |
| Chicago City..... | 54 | E quadrangle..... | 17 |
| Chicago County..... | 54, 79 | East St. Cloud..... | 101, 102, 103, 173 |
| Chokio quadrangle..... | 28-29 | Eastern Ry. of Minnesota..... | 114 |
| Clay County..... | 79 | Echards..... | 35 |
| Clear Lake..... | 76 | Echo quadrangle..... | 141 |
| Clear Water River..... | 20 | Elbow Lake..... | 21, 25, 123-123 |
| Clearwater..... | 100, 172-173 | Elk River..... | 98, 99, 170-171 |
| Clearwater County..... | 14, 79 | Elk River quadrangle..... | 54, 98-99, 170-171 |
| Clearwater quadrangle..... | 100-101, 172-173 | Elm Lake..... | 14 |
| Clementson quadrangle..... | 12 | Emily..... | 71 |
| Clinton..... | 136-137 | Enloe, N. Dak..... | 55 |
| Clithral..... | 27 | Erdahl..... | 22, 34, 132 |
| Coast and Geodetic Survey, elevations by..... | 79-152 | Erharts..... | 34, 38, 46 |
| Cohasset..... | 117 | Erick..... | 77 |
| Cohasset quadrangle..... | 117 | Erie..... | 15 |
| Collegeville..... | 127 | Espetvet..... | 20 |
| Collegeville quadrangle..... | 127 | Esplee quadrangle..... | 15 |
| Collis..... | 135 | Euclid..... | 151 |
| Connor, S. P., work of..... | 54 | Eureka..... | 51 |
| Cooperation by State..... | 5 | Evansville..... | 123 |
| Corcoran..... | 53 | Exoelsior..... | 51 |
| Cork..... | 132 | | |
| Cormorant..... | 39 | F..... | |
| Correll..... | 138 | Fairmount, N. Dak..... | 134 |
| Courtland..... | 144 | Fargo quadrangle..... | 143 |
| Crawford..... | 148 | Farm Island Lake..... | 68 |
| Crooked Lake..... | 66 | Farris..... | 123 |
| Crookston..... | 8, 150 | Felton..... | 143-149 |
| Crookston quadrangle..... | 8, 150-151 | Felton quadrangle..... | 143-149 |
| Crosby..... | 64, 65 | Fergus Falls..... | 33, 34, 45, 49, 146 |
| Cross Lake quadrangle..... | 64, 108, 179 | Fergus Falls quadrangle..... | 33-35, 146-147 |
| Crow Wing County..... | 55, 79, 153 | Ferndale..... | 51 |
| Cuba..... | 114 | Fertile quadrangle..... | 8 |
| Cutler..... | 68 | Findley..... | 50 |
| Cuyuna..... | 72, 73 | Flak..... | 65 |
| Cuyuna quadrangle..... | 69-74, 100, 179-180 | Florence..... | 90, 180-180 |
| | | Forest Lake..... | 83 |
| D..... | | Fort Ridgely..... | 143 |
| Dakota..... | 95, 156 | Fort Ripley..... | 105, 176 |
| Dakota County..... | 79, 153 | Fowlds..... | 13 |
| Dalton..... | 146 | Fox..... | 10 |
| Datum, inland, determination of..... | 7 | Foy..... | 19 |
| Dayton..... | 50, 53, 54, 170 | Foy quadrangle..... | 19 |
| Dayton Bluff..... | 86, 166 | Franconia..... | 54 |
| Deer River..... | 116, 117 | Franklin..... | 143, 143 |
| Deer River quadrangle..... | 116-117 | Fraser..... | 29, 32, 41, 44 |
| Deerwood..... | 67 | Freeburg quadrangle..... | 154-155 |
| Deerwood quadrangle..... | 64-69 | Freeport..... | 123 |
| Delorme..... | 8 | Fridley..... | 97 |

| | Page. | | Page. |
|-------------------------------------|---|---------------------------------|------------------|
| Frontenac..... | 180 | Ironton..... | 65 |
| Funderhide, Paul, work of..... | 14, 20 | Itasca..... | 98 |
| G. | | Itasca County..... | 7 |
| Galesville quadrangle..... | 158 | J. | |
| Gannett, S. S., work of..... | 5 | Jelle quadrangle..... | 16 |
| Garfield..... | 131 | Jenkins..... | 119 |
| Garland quadrangle..... | 16 | Judson..... | 144 |
| Genoa..... | 154 | K. | |
| Germantown..... | 15 | Kasota..... | 145 |
| Germantown quadrangle..... | 15 | Kettle River..... | 81 |
| Gladstone..... | 84 | Kimberly..... | 58, 74 |
| Glen..... | 75, 76 | Kings Coulee..... | 91 |
| Glory..... | 76 | Kittson..... | 150 |
| Goodhue County..... | 79, 153 | Kittson County..... | 79 |
| Goos..... | 11 | L. | |
| Goos quadrangle..... | 10-11 | La Crescent..... | 95, 155 |
| Graceton..... | 12 | La Crescent quadrangle..... | 94-95, 155-159 |
| Graceville..... | 136 | La Crosse, Wis..... | 98 |
| Graceville quadrangle..... | 135-136 | La Prairie..... | 114 |
| Grand Rapids..... | 118 | La Prairie quadrangle..... | 113-114 |
| Granite Falls..... | 140, 141 | Lake Carlos quadrangle..... | 130-131 |
| Grant County..... | 21, 79 | Lake City..... | 91, 159 |
| Grave Lake..... | 65 | Lake City quadrangle..... | 89-91, 159 |
| Great Northern Ry..... | 8, 9, 17, 34, 36, 38, 48, 51, 52, 53, 55, 74, 82, 96, 98, 101, 102, 103, 114, 115, 116, 117, 121, 122, 123, 124, 125, 127, 128, 129, 130, 131, 132, 133, 139, 140, 145, 146, 147, 148, 149, 150, 152, 169, 171, 172, 173 | Lake Crystal quadrangle..... | 144 |
| Greenbush..... | 10 | Lake Elmo quadrangle..... | 87-88, 163-164 |
| Greenbush quadrangle..... | 9-10 | Lake Emily, inlet to..... | 71 |
| Grit quadrangle..... | 20 | Lake Esquagamah..... | 56, 70 |
| Grygla..... | 16 | Lake Itasca quadrangle..... | 126-127 |
| Gully..... | 20 | Lake Lizzie..... | 32 |
| H. | | Lake Marion..... | 41 |
| Hackensack..... | 120-121 | Lake of the Woods..... | 11 |
| Hadler..... | 149 | Lake Side..... | 89, 90 |
| Halstead, G. E., work of..... | 21 | Lake Washington quadrangle..... | 145 |
| Hamel..... | 53 | Lake Waukenabo..... | 86 |
| Hancock..... | 37 | Lamolle..... | 94, 156 |
| Harris..... | 83 | Lewndale..... | 147 |
| Hastings..... | 88, 163 | Le Sueur..... | 145 |
| Hawley quadrangle..... | 148 | Leaks..... | 107, 108 |
| Henderson..... | 145 | Leech Lake..... | 122 |
| Hennepin County..... | 49, 50, 52, 79, 153 | Leon..... | 20 |
| Hereford..... | 48, 133 | Libby..... | 112 |
| Herman..... | 36 | Lida..... | 32, 33 |
| Herman quadrangle..... | 35-36 | Lindford quadrangle..... | 17 |
| Harron, W. H., work of..... | 5 | Liner..... | 16 |
| Highwood..... | 86, 87 | Liner quadrangle..... | 16 |
| Hinckley..... | 82 | Little Falls..... | 104, 175, 176 |
| Hoffman..... | 24 | Little Falls quadrangle..... | 103-104, 174-175 |
| Homer..... | 94, 156 | Little Fork River..... | 13 |
| Houston County..... | 153 | Little Pine River..... | 64 |
| Hubbard County..... | 79 | Lockhart..... | 149 |
| Hubert..... | 106, 119 | Loman..... | 17 |
| Hull..... | 117 | Lomond..... | 124 |
| Hunters..... | 121 | Long Lake..... | 51, 62, 63, 78 |
| I. | | Lost River..... | 20 |
| Indus quadrangle..... | 13 | Lothrop..... | 121 |
| Intergrove..... | 166 | Lows Lake..... | 70 |
| International Falls..... | 14 | M. | |
| International Falls quadrangle..... | 13-14 | McGregor quadrangle..... | 74-75, 111 |
| Iron Hub..... | 73 | McNair, E. L., work of..... | 7-8 |
| | | Madelia quadrangle..... | 144 |
| | | Madison quadrangle..... | 128-130 |
| | | Mahtowa quadrangle..... | 80-82 |

| | Page. |
|---|-------------------------------------|
| Malden Rock quadrangle..... | 89, 159-160 |
| Malcolm quadrangle..... | 16-17 |
| Malmö..... | 75, 76, 77 |
| Maltby..... | 125 |
| Mankato..... | 144 |
| Mankato quadrangle..... | 144-145 |
| Maple Plain..... | 52 |
| Maps, topographic, list of..... | 7 |
| Marsh..... | 18 |
| Marshall, R. B., direction by..... | 5 |
| Marshall County..... | 7, 14, 79 |
| Mayer quadrangle..... | 52 |
| Meade, A. P., Jr., work of..... | 14, 20 |
| Melby..... | 132, 145 |
| Melrose..... | 128-129 |
| Merrifield..... | 61, 62, 108 |
| Middle River..... | 9 |
| Middle River quadrangle..... | 9, 14-15 |
| Midland..... | 68 |
| Milan..... | 139 |
| Milan quadrangle..... | 139 |
| Mildred..... | 120 |
| Mildred quadrangle..... | 120 |
| Mille Lacs Lake..... | 68, 76 |
| Miller..... | 81 |
| Minneapolis..... | 85, 96, 97, 168-170 |
| Minneapolis quadrangle..... | 96, 168-169 |
| Minneapolis & Rainy River Ry..... | 117 |
| Minneapolis & St. Louis R. R..... | 52, 142 |
| Minneapolis, Red Lake & Manitoba Ry..... | 17, 18 |
| Minneapolis, St. Paul & Sault Ste. Marie Ry..... | 31, 56, 67, 72, 73, 132, 133 |
| Minnetka..... | 157 |
| Minnetka quadrangle..... | 157 |
| Minneopa..... | 94 |
| Minnesota City..... | 157 |
| Minnesota & International Ry..... | 61, 107, 119, 120, 121, 122, 125 |
| Minnesota Falls..... | 140, 141 |
| Minnetonka quadrangle..... | 50-52 |
| Mission Creek..... | 82 |
| Mississippi..... | 112, 113 |
| Mississippi River Commission, elevations by..... | 153-181 |
| Montevideo..... | 140 |
| Montevideo quadrangle..... | 140 |
| Monticello..... | 99-100, 171-172 |
| Moose Lake..... | 81 |
| Moose quadrangle..... | 125-126 |
| Morgan quadrangle..... | 142 |
| Morris..... | 37 |
| Morris quadrangle..... | 36-38 |
| Morrison County..... | 79, 153 |
| Morton..... | 142 |
| Morton quadrangle..... | 142 |
| Mud Brook..... | 60, 72 |
| Mud Lake..... | 14, 18 |
| Myers..... | 140 |

N.

| | |
|------------------------|--------|
| Nebish..... | 18 |
| Nebish Lake..... | 18 |
| Nebish quadrangle..... | 18 |
| Nelson..... | 130 |
| Neutral..... | 68, 69 |
| New Brighton..... | 50 |

| | Page. |
|----------------------------|--|
| New Duluth..... | 78 |
| New Prague quadrangle..... | 145 |
| New Ulm..... | 143 |
| New Ulm quadrangle..... | 143-144 |
| Newport..... | 87, 165 |
| Nichols..... | 68 |
| Nicollet County..... | 79 |
| Nokay Lake..... | 65 |
| Norcross..... | 36 |
| Norman County..... | 79 |
| North Branch..... | 83 |
| North Mankato..... | 145 |
| North Prairie..... | 103, 175 |
| North Redwood..... | 142 |
| Northern Pacific Ry..... | 31, 35, 43, 44, 45, 46, 54, 56, 57, 60, 73, 78, 80, 81, 82, 83, 84, 96, 98, 101, 102, 106, 148, 169, 171, 173, 175, 177, 180 |
| Northome..... | 51 |
| Nushka..... | 115, 116 |

O.

| | |
|----------------------------|----------|
| Odessa..... | 138 |
| Omaha R. R..... | 77 |
| Ortonville..... | 137, 138 |
| Ortonville quadrangle..... | 136-138 |
| Osakis..... | 129-130 |
| Osakis quadrangle..... | 129-130 |
| Otsego..... | 99, 171 |
| Ottawa..... | 145 |
| Otter Tail County..... | 21 |
| Ottertail..... | 26, 28 |

P.

| | |
|--------------------------------------|----------------|
| Palsade..... | 59, 74 |
| Parkdale..... | 21, 146 |
| Pelican Lake..... | 22, 39 |
| Pelican Rapids..... | 38, 40 |
| Pelican Rapids quadrangle..... | 38-41 |
| Pelland quadrangle..... | 13 |
| Pencer quadrangle..... | 17 |
| Pepin, Wis..... | 159 |
| Pequis..... | 11 |
| Pequot..... | 119 |
| Perault..... | 8 |
| Perham..... | 42, 43 |
| Perham quadrangle..... | 41-44 |
| Personnel, record of..... | 5 |
| Pine City..... | 83 |
| Pine City quadrangle..... | 83 |
| Pine County..... | 79 |
| Pine Lake..... | 68 |
| Pineknoll..... | 57, 58, 60, 72 |
| Pine River..... | 119, 120 |
| Pine River quadrangle..... | 119-120 |
| Pitt..... | 12 |
| Point Douglas..... | 88 |
| Pokegama Lake quadrangle..... | 118 |
| Polk County..... | 7, 14, 79 |
| Portage..... | 111 |
| Portage quadrangle..... | 114-115 |
| Powell..... | 50 |
| Precise leveling, definition of..... | 5-6 |
| Primary leveling, definition of..... | 5-6 |
| Publication, previous.... | 5 |
| Pullman..... | 87 |
| Puposky..... | 18 |

| Q. | Page. |
|--------------------------------|--------------------|
| Quiring quadrangle..... | 19 |
| R. | |
| Rabbit Lake..... | 72 |
| Rainy River..... | 12, 13, 14 |
| Ramsey County..... | 49, 79, 153 |
| Rapid River..... | 12 |
| Ray, J. M., work of..... | 21, 55 |
| Red Lake..... | 18 |
| Red Lake County..... | 7, 14 |
| Red Lake Falls..... | 9 |
| Red Lake Falls quadrangle..... | 8-9 |
| Red River..... | 25, 47 |
| Red Rock..... | 87 |
| Red Wing..... | 88, 89, 160-161 |
| Red Wing quadrangle..... | 88-89, 160-162 |
| Redby..... | 18 |
| Redwood Falls quadrangle..... | 141 |
| Reeds Landing..... | 92 |
| Reno Junction..... | 154 |
| Rensshaw, J. H., work of..... | 5 |
| Renville..... | 141 |
| Renville County..... | 79 |
| Rhoda..... | 20 |
| Rice..... | 102, 108, 174 |
| Richmond..... | 94, 95, 156 |
| Richville..... | 26, 41, 43 |
| River Junction..... | 96, 155 |
| Robinsdale..... | 50 |
| Rock Creek..... | 82 |
| Rockford quadrangle..... | 52-53 |
| Rollag..... | 40 |
| Rollis quadrangle..... | 15-16 |
| Roosevelt..... | 11 |
| Roosevelt quadrangle..... | 11 |
| Rosby..... | 124 |
| Roseau..... | 10 |
| Roseau County..... | 7, 14 |
| Roseau quadrangle..... | 10 |
| Roseau River..... | 10 |
| Ross Lake..... | 69 |
| Rosburg..... | 56, 59, 60, 74, 75 |
| Rothsay..... | 23, 45, 147 |
| Rothsay quadrangle..... | 45, 147 |
| Ruffy Brook..... | 20 |
| Rush City..... | 82, 83 |
| Rush City quadrangle..... | 82-83 |
| Russia..... | 150 |

S.

| | |
|----------------------------------|------------------------------|
| Sacred Heart..... | 141 |
| St. Bonifacius..... | 51 |
| St. Cloud..... | 101, 102, 103, 173 |
| St. Cloud quadrangle..... | 101-103, 173-174 |
| St. Croix Dalles quadrangle..... | 54 |
| St. Hilaire..... | 9 |
| St. Joseph..... | 127 |
| St. Louis Bay..... | 78 |
| St. Louis County..... | 77, 79 |
| St. Paul..... | 40, 84, 85, 86, 166, 167-168 |
| St. Paul quadrangle..... | 84-87, 164-168 |
| St. Paul Park..... | 87 |
| St. Peter..... | 145 |
| St. Peter quadrangle..... | 145 |
| Sand Creek..... | 63 |

| | |
|-------------------------------------|-------------------|
| Sandridge..... | 9 |
| Sandstone Junction..... | 81 |
| Sandstone quadrangle..... | 81-82 |
| Sandy Lake..... | 20 |
| Sank Center..... | 129 |
| Sank Center quadrangle..... | 129-130 |
| Sank Rapids..... | 101, 102, 173-174 |
| Saum..... | 19 |
| Savage..... | 96 |
| Saxton, W. R., work of..... | 55 |
| Schley..... | 114, 115 |
| Scott County..... | 79 |
| Sea level, mean, definition of..... | 6-7 |
| Seavey quadrangle..... | 75 |
| Secondary elevations..... | 182-183 |
| Semper, C. H., work of..... | 7, 14 |
| Shafer..... | 54 |
| Shakopee..... | 52, 145 |
| Sherburne County..... | 79, 153 |
| Shirley..... | 150-151 |
| Shoreham..... | 29, 31, 32 |
| Short Line Park..... | 80 |
| Sibley County..... | 79 |
| Sleepy Eye quadrangle..... | 143 |
| Smithville..... | 78, 80 |
| Solway quadrangle..... | 20 |
| South Bemidji..... | 124 |
| South St. Paul..... | 106 |
| Stacy..... | 83 |
| Starke..... | 116 |
| Stearns County..... | 153 |
| Steiner..... | 9 |
| Stephen..... | 152 |
| Stevens County..... | 21, 79 |
| Stillwater quadrangle..... | 83-84 |
| Stod..... | 40 |
| Stoddard quadrangle..... | 153-154 |
| Strand..... | 74 |
| Strathcona..... | 9-10 |
| Sturgeon Lake..... | 81 |
| Superior quadrangle..... | 78, 80 |
| Swift..... | 11 |
| Swift County..... | 79 |
| Sylvan quadrangle..... | 106, 177 |

T.

| | |
|-----------------------------------|-------------|
| Taylor's Falls..... | 54 |
| Tennile Lake..... | 21 |
| Tenney..... | 133 |
| Thief Lake..... | 16 |
| Thief River..... | 16 |
| Thief River Falls..... | 9 |
| Thief River Falls quadrangle..... | 9, 14 |
| Thompson, R. P., work of..... | 14 |
| Thomson..... | 80 |
| Thorsborg..... | 22, 24, 132 |
| Tilden Junction..... | 8 |
| Tintah..... | 133 |
| Traverse County..... | 79 |
| Two Rivers, Wis..... | 175 |

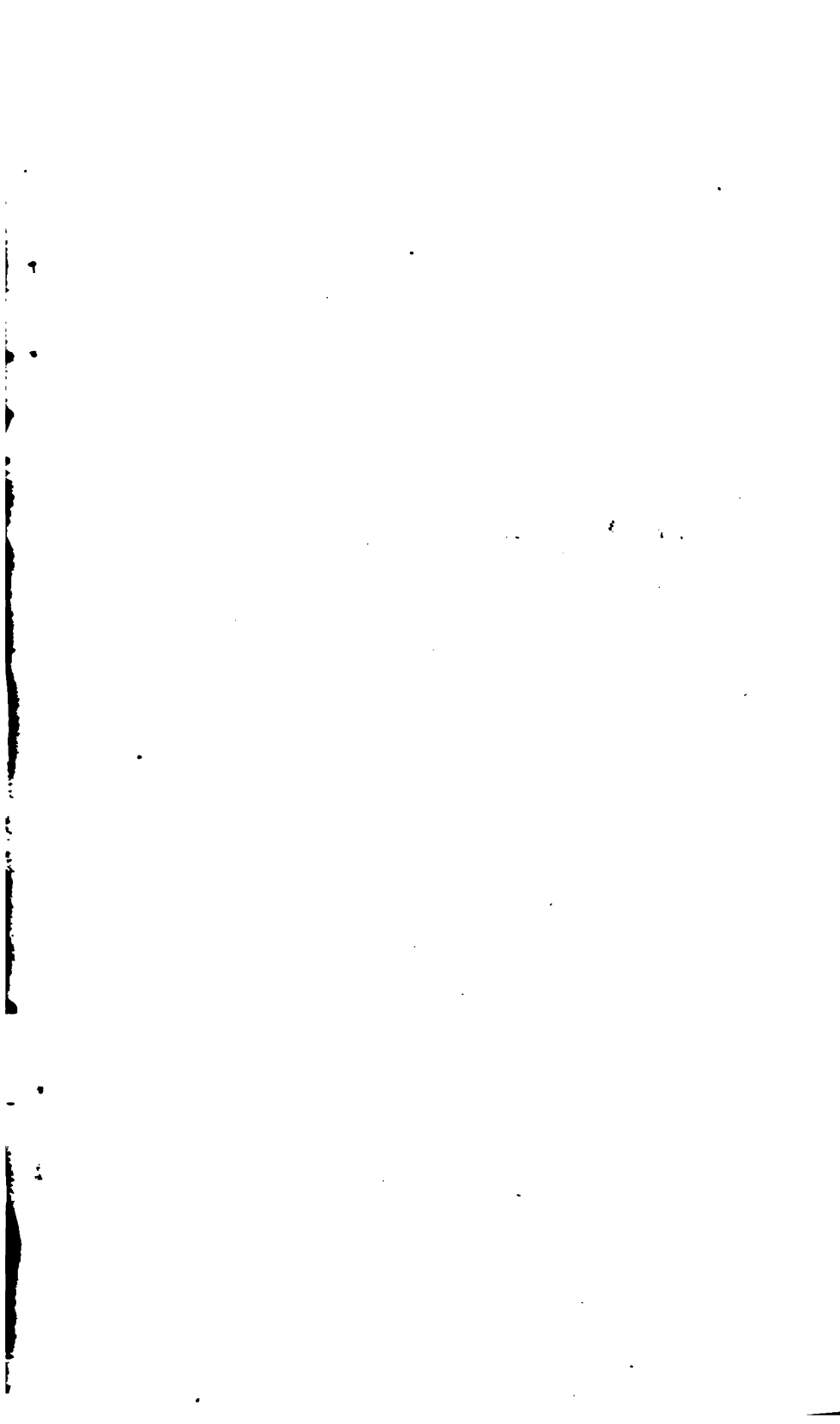
U.

| | |
|---------------------------|------------|
| Underwood..... | 25, 45, 46 |
| Underwood quadrangle..... | 45-47 |
| Urness quadrangle..... | 131-132 |

| | | Page. |
|-------------------------------|------------------|-------|
| V. | | |
| Valparaiso..... | 57, 77 | |
| Verdon quadrangle..... | 111-112 | |
| Vergas..... | 31 | |
| Vergas quadrangle..... | 30-33 | |
| Verna..... | 113 | |
| Vining..... | 26, 27 | |
| W. | | |
| Wabasha..... | 92, 158, 159 | |
| Wabasha County..... | 79, 153 | |
| Wabasha quadrangle..... | 91-93, 158-159 | |
| Wacouts..... | 89 | |
| Wahpeton quadrangle..... | 55, 134 | |
| Waldeck..... | 56, 59, 110, 111 | |
| Walker..... | 121-122 | |
| Walker quadrangle..... | 121-122 | |
| Wall Lake..... | 45 | |
| Warren..... | 151 | |
| Warren quadrangle..... | 151 | |
| Warroad..... | 11 | |
| Warroad quadrangle..... | 11 | |
| Washington County..... | 79, 153 | |
| Watson..... | 139 | |
| Waukenabo..... | 59 | |
| Wayzata..... | 50, 51 | |
| Wealthwood..... | 75, 76, 77 | |
| Wealthwood quadrangle..... | 75-77 | |
| Wegland..... | 45 | |
| Wendell..... | 35, 48, 49 | |
| Wendell quadrangle..... | 48-49, 133 | |
| Werner..... | 18 | |
| West Duluth..... | 78, 80 | |
| West Union..... | 129 | |
| Wheaton..... | 134-135 | |
| Wheaton quadrangle..... | 134-135 | |
| Wheatville..... | 149 | |
| White Bear..... | 49, 84 | |
| White Bear quadrangle..... | 49-50, 84 | |
| White Rock, S. Dak..... | 134 | |
| White Rock quadrangle..... | 134 | |
| Wilkin County..... | 55, 79 | |
| Wilkinson..... | 122, 123 | |
| Williams..... | 11 | |
| Williams quadrangle..... | 11-12 | |
| Willow River..... | 81 | |
| Willow River quadrangle..... | 81 | |
| Wilson, H. M., work of..... | 5 | |
| Winona..... | 93, 156, 157 | |
| Winona & Southwestern Ry..... | 93, 94 | |
| Winona County..... | 79, 153 | |
| Winona quadrangle..... | 93-94, 156-157 | |
| Winsor..... | 20 | |
| Winsor quadrangle..... | 20 | |
| Winterroad quadrangle..... | 17 | |
| Winterroad River..... | 12 | |
| Woods..... | 60, 64 | |
| Wray, D. C., work of..... | 49 | |
| Wright County..... | 52, 153 | |
| Wyoming..... | 83 | |
| Y. | | |
| Yarmouth..... | 133 | |







DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

BULLETIN 561

RESULTS OF SPIRIT LEVELING IN HAWAII

1910 TO 1913, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER

Work done in cooperation with the Territory of Hawaii, W. F. Frear, Governor
Marston Campbell, Superintendent of Public Works



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CONTENTS.

| | Page. |
|---|-------|
| Introduction | 5 |
| Cooperation..... | 5 |
| Scope of the work..... | 5 |
| Personnel..... | 5 |
| Classification..... | 5 |
| Bench marks..... | 5 |
| Datum..... | 6 |
| Primary leveling | 7 |
| Hawaii Island..... | 7 |
| Hamakua, Honomu, Kohala, and Waipio quadrangles (Hawaii County)..... | 7 |
| Hilo, Kilauea Crater, and Puna quadrangles (Hawaii County)..... | 20 |
| Kauai Island..... | 25 |
| Kapaa, Lihue, Na Pali, and Waimea 15' quadrangles, including area shown on Hanalei, Hanapepe, Kilauea, Kapaa, Lihue, Mana, and Na Pali atlas sheets (Kauai County)..... | 25 |
| Appendix: Secondary elevations | 37 |
| Index | 41 |

ILLUSTRATION.

| | Page. |
|---|-------|
| PLATE I. Geological Survey bench marks | 5 |





GEOLOGICAL SURVEY BENCH MARKS

A. Tablet used in cooperating States. The State name is inserted at *G*.
B and *D*. Copper temporary bench mark, consisting of a nail and copper washer.
A, *C*, and *E*. Tablets for stone or concrete structures.
F. Iron post used where there is no rock.

RESULTS OF SPIRIT LEVELING IN HAWAII, 1910 TO 1913, INCLUSIVE.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Cooperation.—The Territory of Hawaii contributed financially to the work during the years 1910 to 1913 inclusive. W. F. Frear was governor and Marston Campbell superintendent of public works during this period.

Scope of the work.—All results of spirit leveling in the Territory of Hawaii by the United States Geological Survey are included in this report, arranged by quadrangles. All of the elevations are based on tidal bench marks of the Coast and Geodetic Survey, the Corps of Engineers, United States Army, and the Hawaii Railroad Co.

Personnel.—The field work of 1910 and 1911 was done under the direction of T. G. Gerdine, that of 1912 and 1913 under the direction of G. R. Davis, all under the general supervision of R. B. Marshall, chief geographer.

Credit is given to the respective levelmen in the introductions to the several lists. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, and D. H. Baldwin, topographer, under the general direction of E. M. Douglas, geographer.

Classification.—No precise leveling has been done by the United States Geological Survey in this territory. For primary lines prism and wye standard levels are used; lines are run in circuits, with an allowable closing error in feet represented by $0.05 \sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given the work to maintain this standard. For circuit closures careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze tablet (C and E , Pl. I), 3.5 inches in diameter and one-quarter inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (F , Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post 3.5 inches in outer diameter and

4 feet in length, which is set about 3 feet in the ground. The bottom is spread out to a width of 10 inches, in order to give a firm bearing on the earth. A bronze or aluminum-bronze cap is riveted upon the top of the post. A third style of bench mark with abbreviated lettering (*B* and *D*, Pl. I), is used for unimportant points. This consists of a special copper nail 1.5 inches in length driven through a copper washer seven-eighths inch in diameter. The tablets, as well as the caps on the iron posts, are appropriately lettered, and State cooperation is indicated by the addition of the State name (*G*, Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot as determined by the levelman. These numbers are stamped with $\frac{1}{16}$ -inch steel dies on the tablets or post caps, to the left of the word "FEET." The office adjustment of the notes and the reduction to mean sea-level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey, at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of winds and tides were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions, such as long, narrow bays, rivers, and like features, will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea levels determined from observations in the Atlantic Ocean, the Gulf of Mexico, and the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the sea coast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "DATUM" on tablets or posts. For such areas corrections for published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

PRIMARY LEVELING.

HAWAII ISLAND.

Hamakua, Honomu, Kohala, and Waipio quadrangles.

HAWAII COUNTY.

The elevations in the following list were determined by primary leveling, based upon mean sea level. At Hilo one year's observations by the Corps of Engineers, United States Army, by automatic tide gage, June 1, 1911, to May 31, 1912, were used, and at Mahukona observations for six months in 1910 from notes by Mr. Elgin, of the Hawaii Railroad Co. These were the principal tide gages, but observations were also made at Kawaihae, January 4 to 15, 1911, which though inadequate have been used because checked by leveling from Mahukona, but comparison with the Hilo gage for same dates indicates that the bench-mark elevation at Kawaihae should be lowered 0.5 foot to agree with the year's mean. A single low-tide reading was made at Pololu Gulch which was not used because of a discrepancy of 1 foot with the line from Kohala, and a single low-tide reading was made at Laupahoehoe on December 12, 1910, from which by simultaneous comparison at Hilo a mean sea-level elevation was obtained which was accepted on account of check by level line from Hilo. The error adjusted between Hilo and Kawaihae was about 1 foot, but if it becomes necessary to decrease the elevation at Kawaihae the adjustment will be greater. On account of this possibility most of the error has been adjusted east of Honokaa, the field results west of that point being practically undisturbed.

The leveling was done in Honomu and Hamakua quadrangles in 1910 by W. H. Barringer, in Waipio quadrangle in 1910 and 1911 by Barringer, and in Kohala quadrangle in 1911 by Barringer and S. H. Birdseye. Additional leveling in Honomu quadrangle was done in 1912 by Birdseye and J. S. Taylor, and in Kohala and Waipio quadrangles in 1913 by Birdseye.

Barringer's lines were run with yard rod and prism level and Birdseye's lines with New York rod and wye level, the latter consisting of rerunning Barringer's line from a point 13 miles south of to a point 5.5 miles south of that place and thence south to Kauhola lighthouse.

HAMAKUA QUADRANGLE.

[Latitude 20°-20° 15'; longitude 155° 15'-155° 30'.]

From Laupahoehoe northwest along road to Honokaa.

| | |
|---|------------------|
| Laupahoehoe, 0.8 mile northwest of, 100 feet north of Japanese settlement, 50 feet south of Waipunalei Gulch, mountainward side of road; copper nail in tree trunk, aluminum tag stamped "333"..... | Feet. 333. 63 |
| Laupahoehoe, 2 miles northwest of, south edge of Kaawalii Gulch, on edge of pali and at turn in road into gulch; copper nail in top of fence post, aluminum tag stamped "249," painted "U. S. B. M."..... | 248. 93 |

| | |
|---|------------------|
| Laupahoehoe, 2.5 miles northwest of, north edge of Kaawalii Gulch, seaward side of road, 75 feet southwest of first telephone pole, top of small railroad rail driven in ground and projecting about 3 inches (rail is used to hold pipe line, and is painted with red and white paint); aluminum tag on fence post 3 feet from rail is stamped and post painted "U. S. B. M." .. | Feet. 245. 22 |
| Laupahoehoe, 3.8 miles northwest of, 0.5 mile south of Ookala, at summit of hill between Kaawalii Gulch and Ookala, 300 yards north of plantation railroad crossing, mountainward side of road in deep cut, in shelf of rock; bronze tablet stamped "450" (painted "U. S. B. M.")..... | 450. 434 |
| Ookala, 200 feet east of, northwest corner of Ookala school lot, on outside of fence, 1 1/2-inch iron pipe used as land mark; top of pipe, aluminum tag stamped "434," fence painted "U. S. B. M." | 433. 94 |
| Ookala, 0.7 mile northwest of, east side of south end of bridge over Kaula Gulch, iron bolt on mountainward side; aluminum tag stamped "560," painted "U. S. B. M." | 562. 19 |
| Ookala, 1.5 miles northwest of, in railing on mountainward side of masonry culvert over Kaholo stream; copper nail, aluminum tag stamped "735," painted "U. S. B. M." | 736. 46 |
| Keehia schoolhouse, 0.5 mile northwest of, 2.5 miles south of Kukaiau, cut in road below Chinese truck garden, seaward side of road, in cement in shelf of rock 4 feet above ground; bronze tablet stamped "900" ("U. S. B. M." painted on adjacent rocks)..... | 901. 995 |
| Kukaiau, 1.25 miles southeast of, on white wooden covered bridge over Kaala Gulch, east side of south end of bridge; copper nail in floor beam, aluminum tag stamped "918," painted "U. S. B. M." | 919. 34 |
| Kukaiau, 0.25 mile southeast of, on white wooden covered bridge, east side of north end of bridge; copper nail in floor beam, aluminum tag stamped "806," painted "U. S. B. M." | 807. 79 |
| Kukaiau, 0.25 mile northwest of, 300 feet north of Japanese store at bend of road, north side; copper nail in root of tree, aluminum tag stamped "808", tree painted "U. S. B. M." | 810. 09 |
| Kukaiau, 0.6 mile northwest of, east side of north end of wooden bridge over gulch, in concrete abutment; bronze tablet stamped "759," painted "U. S. B. M." | 761. 752 |
| Paauiilo, 1 mile southeast of, 200 feet north of Paauiilo schoolhouse, southwest corner of wooden railing at culvert; copper nail in top of end post, aluminum tag stamped "758," painted "U. S. B. M." | 759. 21 |
| Paauiilo, 300 feet west of, west side of north end of bridge, in masonry abutment; bronze tablet stamped "764" | 765. 648 |
| Paauiilo, 0.5 mile northwest of, west side of south end of wooden bridge over stream, in top of third post of railing from Paauiilo side; copper nail, aluminum tag stamped "703", painted "U. S. B. M." | 704. 39 |
| Paauiilo, 1.8 miles northwest of, 300 yards northwest of Kalopa Church, on south side of small culvert over Kaumoali Gulch; copper nail in railing, aluminum tag stamped "752," painted "U. S. B. M." | 753. 06 |
| Paauiilo, 2.3 miles northwest of, 300 feet south of Kalopa saloon, south end of small culvert over Alilipali Gulch, in concrete arch; bronze tablet stamped "734 1910," railing painted "U. S. B. M." | 735. 887 |
| Kalopa saloon, 0.5 mile northwest of, at forks of second-class road to Paauiilo and opposite sign "To Paauiilo," on wooden railing on south side of road; copper nail in top of post, aluminum tag stamped "748", painted "U. S. B. M." | 749. 09 |

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| Kalopa saloon, 1 mile northwest of, 100 yards south of Japanese houses, on west side of south end of black wooden bridge over Kuikuipapa Gulch; iron bolt painted with circle, aluminum tag stamped "793," painted "U. S. B. M." | Feet. 791. 58 |
| Honokaa, 3.25 miles southeast of, 1.75 miles northwest of Kalopa saloon, 100 feet south of point where Hawaiian Irrigation Co.'s flume No. 6 crosses gulch, on west side of north end of Black Bridge over gulch; copper nail in floor beam, aluminum tag stamped "909," painted "U. S. B. M." | 906. 93 |
| Honokaa, 2.5 miles southeast of, on wooden railing to concrete culvert, south side of road, in top of fifth post from Kalopa end; copper nail, aluminum tag stamped "1031," painted "U. S. B. M." | 1, 029. 65 |
| Honokaa, 2 miles southeast of, on north side of overhead railroad crossing, at sign "F 3"; copper nail on lower timber of north bent | 1, 062. 42 |
| Honokaa, 1.5 miles southeast of, bridge over undergrade double-tracked railroad crossing, southwest side and west corner of bridge, in abutment; bronze tablet stamped "1107 1910," painted "U. S. B. M." on bridge floor | 1, 105. 037 |
| Honokaa, 0.75 mile southeast of, 400 feet northwest of road forks to Paauhau, on bridge over Kahaupu Gulch, east side of north end of bridge; copper nail in lower chord; aluminum tag stamped "1091" | 1, 089. 78 |
| Honokaa, 250 yards east of, 200 feet east of road leading to Volcano Stables, southeast corner of Rickard's hotel lot, in south end of concrete culvert; bronze tablet stamped "1116" | 1, 113. 871 |
| Honokaa, 250 yards west of, forks of roads to Waimea and Kukuihaele, in northwest corner of road turn on bank, 3 feet above road surface; copper nail in root of tree marked "1102" | 1, 100. 36 |

From Honokaa southwest along road to Ahualoa Homesteads.

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| Honokaa, 2 miles southwest of, 200 feet north of junction of new road and short cut, east edge of Portuguese homestead lands, southeast corner of wooden bridge, in concrete abutment; bronze tablet stamped "1767" ... | 1, 765. 000 |
| Honokaa, 2.5 miles southwest of, 200 yards west of Ahualoa saloon, forks of road to Ahualoa schoolhouse on seaward side of road, 50 feet north of gate house; copper nail in top of fence post, aluminum tag stamped "1909" painted "U. S. B. M." | 1, 907. 58 |
| Honokaa, 3.25 miles west of, 100 yards northwest of native house, northeast corner of black wooden bridge over small drain; top of bolt head painted with circle and "U. S. B. M.," aluminum tag stamped "2056" | 2, 053. 94 |

From Honokaa northwest along road to Kawela.

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| Honokaa, on front step of plantation engineer's office; copper nail | 1, 117. 20 |
| Honokaa, 1.25 miles north of, 100 feet east of Ahualoa triangulation station, mountainward side of road; chisel point on rock, painted "U. S. B. M. 1145" | 1, 143. 36 |
| Honokaa, 1.25 miles north of, at Ahualoa triangulation station, top of small bare knoll, 100 feet south from road, in cement pier; bronze tablet stamped "1177," rock monument painted "U. S. B. M." | 1, 174. 844 |
| Honokaa, 2.1 miles north of, 350 feet south of overhead flume crossing and road leading mountainward, in top of fence post on seaward side of road opposite Japanese camp; copper nail, aluminum tag stamped "1182," painted "U. S. B. M." | 1, 180. 79 |

HONOLULU QUADRANGLE.

[Latitude 19° 45'-20°; longitude 155°-155° 15'.]

From point near Hilo north and northwest along road to Laupahoehoe.

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| Hilo, 3 miles north of, Hilo R. R. long trestle over Kaiwika stream, east side of south end of trestle; copper nail in stringer, aluminum tag stamped "96"..... | Feet. 96. 11 |
| Hilo, 4.3 miles north of, Hilo R. R. concrete bridge over Pahoehe stream, parallel to county steel bridge, west side of north end, in concrete coping; bronze tablet stamped "156"..... | 156. 423 |
| Hilo, 4.8 miles north of, 0.2 mile southeast of Papaikou, north end of east side of Hilo R. R. trestle over Kapue stream; copper nail in stringer, aluminum tag stamped "167"..... | 167. 57 |
| Papaikou, 1.8 miles north of, 100 yards northeast of small rice mill, in cement on southeast abutment of concrete county bridge over Kalaoa stream; bronze tablet stamped "162 1910"..... | 162. 309 |
| Papaikou, 3 miles north of, 200 yards north of Japanese store, east side of north end of county bridge over stream; copper nail in stringer, aluminum tag stamped "159"..... | 159. 68 |
| Papaikou, 4 miles north of, 1.5 miles south of Pepeekeo store, blacksmith shop, and camp, west side of north end of county steel bridge over Kawainui stream, in concrete abutment; bronze tablet stamped "213 1910"..... | 213. 030 |
| Pepeekeo store, 0.5 mile south of, near Japanese houses, east side of south end of concrete bridge over Waiaama Gulch; chisel point, painted "U. S. B. M. 379"..... | 379. 01 |
| Pepeekeo store, in front of, southwest corner of porch; center of 1-inch square hole in concrete gutter, painted "U. S. B. M. 458"..... | 458. 35 |
| Pepeekeo store, 1.4 miles north of, on south end of bridge over Kapehu stream; bronze tablet stamped "342"..... | 342. 02 |
| Honolulu, 175 feet southwest of, in front of Honolulu Meat Market, in top of 4 by 4 inch post projecting 3 inches above ground; copper nail, aluminum tag stamped "282," painted "U. S. B. M."..... | 282. 65 |
| Hakalau, 300 feet north of, in front of Hakalau Mill cable hoist, just north of tracks to mill; the most southerly point of top of 6-inch pipe which projects 18-inches out of ground, painted "U. S. B. M."..... | 161. 45 |
| Hakalau, 1.5 miles north of, covered county steel bridge over Umauma stream, east side of north end of concrete abutment, in cement; bronze tablet stamped "298 1910"..... | 298. 176 |
| Hakalau, 2.3 miles north of, on county road; chisel point on concrete culvert over Peleau stream, painted "U. S. B. M."..... | 321. 06 |
| Honohina store, 1 mile north of, west side of south end of county steel bridge over Piha Gulch; rivet head with circle painted around it, aluminum tag stamped "214," "U. S. B. M." painted on railing..... | 205. 22 |
| Pohakapuka schoolhouse, 500 feet north of, southeast abutment of steel bridge over Manaloa Gulch, in cement; bronze tablet stamped "233".... | 233. 565 |
| Pohakapuka schoolhouse, 1.25 miles north of, west side of north end of county steel bridge over Pohakapuka Gulch; rivet head with red and white circle painted around it, painted "U. S. B. M."..... | 283. 03 |
| Maulua Gulch, south edge of, where road from Hilo turns, 75 feet southeast of overhead flume crossing, beside telephone pole, in top of fence post; copper nail, aluminum tag on post stamped "255," adjacent rocks painted "U. S. B. M."..... | 255. 19 |

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| Maulua Gulch, in bottom of, at road crossing, west side of north end of county steel bridge, in cement of concrete abutment and wing walls; bronze tablet stamped "106 1910" | Feet. 106.464 |
| Maulua Gulch bridge, 0.5 mile north of, Laupahoehoe side of gulch, west side of north end of covered wooden bridge over stream; copper nail in floor beam, aluminum tag stamped "241," painted "U. S. B. M." | 241.77 |
| Maulua Gulch bridge, 0.7 mile north of, on mountainward side of road just inside of fence; Hilo R. R. bench mark consisting of iron pipe filled with concrete (railroad elevation 280.870, probably based upon a low water level) | 280.119 |
| Maulua Gulch bridge, 1 mile north of, east side of north end of wooden bridge over Kapehu Gulch (seaward side); copper nail in floor beam, aluminum tag stamped "278," painted "U. S. B. M." on upright | 278.72 |
| Papaaloa, 400 feet mountainward of, east side of north end of covered wooden bridge over Kaiwilahilahi Gulch, in concrete abutment; bronze tablet stamped "240 1910" | 240.212 |
| Laupahoehoe, 200 feet north of, in concrete balustrade to concrete steps of side entrance to E. W. Barnard's hotel; bronze tablet stamped "108 1910" | 108.482 |
| Laupahoehoe Landing, in wharf floor at north leg of derrick; copper nail (on spur line), 7.65 feet above zero of gage | 6.343 |
| Staff reading on tide gage at 3.30 p. m., December 12, 1910, when low tide occurred, was 1.2 feet. (Low tide on that day was 0.107 foot lower than mean sea level from 1 year's observations at Hilo.) | |

From Wainaku Mauka camp northwest to Kaiwiki, thence northeast to Onomea.

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| Wainaku Mauka camp, 0.5 mile mountainward from south end of covered wooden bridge, in beam; copper nail | 646.49 |
| Kaiwiki Homesteads road, at end of, 50 feet seaward from bridge over stream, in cement pier on south side of road; bronze tablet stamped "1719" | 1,719.256 |
| Honolii stream, at upper trail crossing of, 0.4 mile south of Japanese camp, on north bank of Honolii gulch, near large lepua tree marked with flag, in top of stake; copper nail | 1,281.07 |
| Papaikou post office, 2 miles west of, at camp on main road mountainward from Papaikou, at fork of trail to south, in flume post; copper bolt | 979.80 |
| Papaikou post office, 2.5 miles mountainward from, at fence corner of third house from mountainward end of homesteads, where trail turns north, in cement pier; bronze tablet stamped "1115" | 1,115.008 |
| Papaikou post office, 4 miles north of, steel bridge over Kawainue stream, in northwest abutment; bronze tablet | 213.030 |

From point 1.5 miles northwest of Hakalau south and east to Pepekeo.

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| Hakalau post office, 1.5 miles northwest of, south end of covered bridge over Umauma Gulch, in east abutment; bronze tablet stamped "298" | 298.176 |
| Puaki, Japanese camp, at base of flagpole, in top of seaward post; copper bolt | 489.56 |
| Chin Chuck camp, 0.1 mile northwest of, on bridge over main Hakalau gulch, northwest end of bridge, on wooden bent; circle of white paint .. | 845.05 |
| Chin Chuck camp, 0.7 mile south of, on south side of homestead road, at lot corner 2 feet above ground; top of iron pipe | 840.87 |
| Wooden bridge, 0.5 mile mountainward from, at bend in road 500 feet south-east of Japanese house, seaward side of road, in top of stake; tack | 1,145.55 |

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| Akaka Falls, 0.4 mile north of, east side of forks of trail, in top of stump, mountainward side; tack..... | Feet. 1, 275. 08 |
| Akaka Falls, 0.3 mile southeast of, at end of rock trail beside flume, in edge of flume; copper nail..... | 1, 224. 51 |
| Honomu, 2.5 miles mountainward from, on main macadam road, at forks of stone trail to north, at foot of eucalyptus tree, in top of cement pier; bronze tablet..... | 1, 178. 821 |
| Alalaa triangulation station, 2 miles northwest of, at forks of macadam road and rock trail, on seaward side of road, in top of stake; tack..... | 1, 088. 62 |
| Alalaa triangulation station, 1.9 miles west of, at junction of main flumes, 15 feet seaward from small bridge over gulch, in top of stake; tack..... | 1, 152. 74 |
| Alalaa triangulation station, 1.1 miles west of, 100 feet southeast of stables at Japanese camp, at foot of rain gauge, in top of stake; tack..... | 863. 46 |
| Alalaa triangulation station, at top of Alalaa hill, in rock marking station; bronze tablet stamped "758"..... | 758. 432 |
| Pepeekeo store, in front of, southwest corner of porch, at concrete gutter; 1-inch square hole. painted "U. S. B. M. 458"..... | 458. 35 |

From point near Waa Wao camp to edge of timber and return.

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| Chin Chuck camp. 0.8 mile west of, at junction of stone trails, 100 feet south of red roofed house, on seaward side of upper trail, in cement pier; bronze tablet stamped "1218"..... | 1, 218. 631 |
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From point 2 miles north of Honomu west to point 0.7 mile south of Chin Chuck camp.

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| Homestead, at first house, in seaward end of third step; circle around nailhead..... | 411. 51 |
| Homestead, south end of old wooden bridge, top of rock; paint mark..... | 583. 36 |
| Road forks on Homestead road, at southeast corner of, 2 miles mountainward, south of main county road, in rock; bronze tablet..... | 727. 173 |

From point 2.3 miles northwest of Hakalau post office west, northwest, and north to Pohakupuka schoolhouse.

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| Hakalau post office, 2.3 miles northwest of, concrete culvert on county road, seaward side of south end; chisel point painted "U. S. B. M."..... | 321. 06 |
| Honohina triangulation station, in cement pier marking station; bronze tablet stamped "702"..... | 702. 970 |
| Waikamalo Gulch, upper covered wooden bridge over, seaward side of north end, in railing of approach; copper nail..... | 1, 134. 07 |
| Haiku triangulation station, 0.4 mile northwest of, where trail connects with old Government road, in top of stake; tack..... | 571. 43 |
| Puu Ohai triangulation station, 0.18 mile east of, at trail forks between two gulches, in top of stake; tack..... | 608. 16 |
| Pohakapuka schoolhouse, 500 feet north of, steel bridge over Monaloa Gulch, in southeast abutment; bronze tablet..... | 233. 565 |

At point 1.4 miles west of Haiku triangulation station.

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| Haiku triangulation station, 1.43 miles west of, at Homestead house on edge of timber (on west side of Ninole Gulch) at bottom of front steps, in top of cement pier; bronze tablet stamped "1403"..... | 1, 403. 485 |
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At Puu Ohai triangulation station.

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| Puu Ohai triangulation station, in top of cement pier, station mark; bronze tablet stamped "735"..... | 735. 619 |
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KOHALA QUADRANGLE.

[Latitude 20°-20° 15'; longitude 155° 45'-156°.]

From Mahukona northeast along road to point near Kohala post office.

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| Mahukona Landing, just northwest of most northern one of bolts used as anchor bolts for wall, 45 meters around wall north from corner at landing; cross on sea wall (C. & G. S. B. M. No. 6 described as 14.52 feet above zero of gage)..... | Feet. 11. 327 |
| Mahukona Landing, on west side of rock, cement covered walk, as close to wall as the rod could be held, alongside of hinges or plates of an iron gate (C. & G. S. B. M. No. 3 described as 15.67 feet above zero of gage)..... | 12. 521 |
| Zero of gage from 6 months' readings in possession of Hawaii R. R. Co..... | -3. 171 |
| Mahukona Landing, 150 feet north of, 100 feet west of Mahukona school-house, 175 feet southwest of Mahukona post office, top of sea wall, in concrete; bronze tablet stamped "11.41"..... | 11. 410 |
| Mahukona, 0.5 mile east of, at fork of road to Puuhue; chisel point on lava rock, painted "U. S. B. M. 143" | 143. 22 |
| Mahukona, 1 mile east of, at triangulation station, mountainward side of road; chisel point on boulder, painted "U. S. B. M."..... | 257. 45 |
| Mahukona, 2 miles northeast of, 1 mile south of rock crusher, seaward side of road; chisel point on rock, painted "U. S. B. M. 359"..... | 358. 72 |
| Mahukona, 2.5 miles northeast of, on small rise; chisel point on rock..... | 363. 20 |
| Mahukona, 2.75 miles northeast of, opposite rock crusher which stands on seaward side of road, in boulder on mountainward side of road; bronze tablet, rock painted "U. S. B. M."..... | 372. 176 |
| Mahukona, 3.75 miles northeast of, 0.5 mile north of rock crusher, 200 feet southwest of mail box for Houoipu, mountainward side of road; chisel point on rock, painted "U. S. B. M."..... | 448. 25 |
| Mahukona, 4.75 miles northeast of, 300 feet east of forks of road to Houoipu, mountainward side of road, in rock; bronze tablet, rock painted "U. S. B. M."..... | 531. 433 |
| Mahukona, 5.6 miles east of, 6 miles west of Kohala, 0.5 mile east of road forks to Houoipu, seaward side and at end of deep cut in road; chisel point on boulder..... | 570. 64 |
| Kohala post office, 5 miles west of, west end of cane lands, 50 feet west of overhead flume crossing; tenpenny nail with copper washer set in rock, painted "U. S. B. M."..... | 621. 70 |
| Kohala post office, 4.3 miles west of, at forks of three roads, 150 feet west of overhead flume crossing, at forks of Hualua road and Mahukona-Kohala road, copper nail in top of post which projects 1 foot above ground, fence post painted "U. S. B. M."..... | 629. 59 |
| Kohala post office, 2.5 miles west of, 120 feet south of Bauzai Hotel, at corner of road leading to Hawi plantation stables; chisel point on rock, southeast corner of road forks, painted "U. S. B. M."..... | 589. 84 |
| Kohala post office, 1.2 miles west of, at forks of road to Waimea, black steel standpipe or strainer, concrete wall at outlet; chisel point on cemented rock, painted "U. S. B. M."..... | 554. 11 |

From Kawaihae east along road 6 miles.

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| Kawaihae, 100 feet west of, end of sea wall on north side of wharf, 100 yards south of Kawaihae wireless station, northwest corner of sea end of approach to wharf; bronze tablet, 8.059 feet above zero of gage..... | 5. 959 |
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| Kawaihae, 0.75 mile south of, at bend of road where it turns east, beside a stone wall on north side of road; copper nail in root of tree, aluminum tag, painted "U. S. B. M."..... | Feet. 5.08 |
| Kawaihae, 1 mile southeast of; copper nail in top of milepost 11-1, aluminum tag, painted "U. S. B. M."..... | 95.88 |
| Kawaihae, 2 miles east of; copper nail in top of milepost 10-2, aluminum tag, painted "U. S. B. M."..... | 382.65 |
| Kawaihae, 2.75 miles east of, 0.25 mile west of milepost 9-3, at northwest corner of wooden bridge over gulch; copper nail in floor, aluminum tag stamped, painted "U. S. B. M."..... | 623.68 |
| Kawaihae, 3 miles east of; copper nail in milepost 9-3..... | 678.33 |
| Kawaihae, 3 miles east of, 50 feet northwest of milepost 9-3, in rock ledge; bronze tablet stamped "676"..... | 675.638 |
| Kawaihae, 4 miles east of, south side of road; copper nail in top of milepost 8-4, aluminum tag stamped, painted "U. S. B. M."..... | 976.18 |
| Kawaihae, 5 miles east of, 7 miles west of Waimea, south side of road; copper nail in top of milepost 7-5, aluminum tag stamped, painted "U. S. B. M."..... | 1, 271.75 |
| Kawaihae, 6 miles east of, 6 miles west of Waimea; copper nail in top of milepost 6-6..... | 1, 559.39 |
| Kawaihae, 6 miles east of, 6 miles west of Waimea, 150 feet southwest of milepost 6-6, in concrete post on top of small rocky knoll; bronze tablet stamped "1562"..... | 1, 562.006 |

From point 7 miles northwest of Waimea northwest along road to Kohala.

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| Waimea (Kamuela post office) 7 miles north of; copper nail in top of milepost 7-18, aluminum tag stamped "3470," painted "U. S. B. M."..... | 3, 449.64 |
| Waimea (Kamuela post office), 7.8 miles north of, 125 feet from old shack near stone corrals, 10 feet from ditch crossing, mountainward side of road, in rock; bronze tablet stamped "3503," painted "U. S. B. M.".. | 3, 493.282 |
| Waimea, 9 miles north of; copper nail in top of milepost 9-16, aluminum tag stamped "3538," painted "U. S. B. M."..... | 3, 528.70 |
| Waimea, 10 miles north of; copper nail in top of milepost 10-15, aluminum tag stamped "3381," painted "U. S. B. M."..... | 3, 371.18 |
| Waimea (Kamuela post office), 11 miles north of, 25 feet southwest of milepost 11-14, in rock on seaward side of road; bronze tablet stamped "3204," painted "U. S. B. M."..... | 3, 194.372 |
| Waimea, 12 miles north of, in front of Kahua ranch house or Frank Wood's house, on mountainward side of road; chisel point on rock, painted "U. S. B. M. 3043."..... | 3, 033.18 |
| Kohala, 12.7 miles south of, between telephone line and road, 200 feet west of road; copper nail in root of old dead tree (this tree is only one in vicinity), aluminum tag stamped "2906," painted "U. S. B. M."..... | 2, 896.30 |
| Kohala, 10 miles south of, 100 feet south of gate on main road, 100 feet seaward of road, in rock with monument built around it; bronze tablet stamped "2613," painted "U. S. B. M." on monument..... | 2, 602.783 |
| Kohala, 9 miles south of, at northwest corner of cultivated field; chisel point on rock, painted "U. S. B. M.," aluminum tag on fence post stamped "2408"..... | 2, 397.74 |
| Kohala, 7.5 miles south of, at junction of short cut and main road, mountainward side of road, opposite northeast fence corner; chisel point on rock..... | 2, 171.60 |
| Kohala, 6 miles south of, 0.25 mile south of old gate at corner of cultivated field, on mountainward side of road; chisel point on rock, painted "U. S. B. M. and 1875"..... | 1, 864.34 |

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| Kohala, 5.5 miles south of, opposite northwest corner of cultivated field, in boulder on seaward side of road; bronze tablet stamped "1780," painted "U. S. B. M."..... | Feet. 1,769.228 |
| Kohala, 4.5 miles southwest of, 150 feet west of sharp turn in road, 20 feet east of fence corner, seaward side of road, midway between last two houses in homesteads on mountainward side of road; chisel point on rock, painted "U. S. B. M." on fence post..... | 1,556.03 |
| Kohala, 4 miles southwest of, small house on seaward side of road, in top of west post at green gate; copper nail, painted "U. S. B. M."..... | 1,407.66 |
| Kohala, 3.2 miles southwest of, small white house at edge of homestead lands, mountainward side of road, 100 feet south of gate to house; chisel point on large boulder, painted U. S. B. M."..... | 1,227.92 |
| Kohala, 2.2 miles southwest of, at culvert where Kohala ditch crosses under Waimea road, in makai wall of ditch and 1 foot from cone-shaped bench mark of Kohala Ditch Co.; bronze tablet..... | 965.121 |
| Kohala Ditch Co.'s cone-shaped bench mark (Kohala Ditch Co.'s elevation is 964.65 feet above high tide)..... | 965.86 |
| Kohala, 1.5 miles southwest of, at entrance to Kingsley's house, 20 feet north of gate; chisel point on rock, painted "U. S. B. M."..... | 723.41 |

From point 6 miles south of Kohala south to Kawaihae.

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| Puu Hue ranch house, 0.9 mile south of, 400 feet southeast of red-roofed house, 50 feet south of gate on mountainward side of trail; chisel point on rock in rock mound, painted "U. S. B. M. 1722"..... | 1,721.28 |
| Puu Hue ranch house, 1.8 miles south of, at Kahua Gate on trail to Kawaihae, 30 feet south of gate; chisel point on rock in rock mound, painted "U. S. B. M. 1750"..... | 1,748.79 |
| Kahua Gate on Kawaihae trail, 0.8 mile south of, on top of small rise on seaward side of trail; chisel point on rock, painted "U. S. B. M."..... | 1,632.01 |
| Kahua Gate, 1.9 miles south of, on small rise near large cactus bush, on west side of trail; chisel point on rock in mound of stones, painted "U. S. B. M. 1448"..... | 1,446.93 |
| Kahua Gate, 2.9 miles south of, on top of sharp rise, due west of Puu Pili; chisel point in rock mound, painted "U. S. B. M. 1353"..... | 1,351.62 |
| Kawaihae, 5.6 miles north of, forks of trail to Kahua and Puu Hue, small knoll just south of trail, forks on east side of Puu Hue trail, 30 feet north-west of rock monument 2.5 feet high; chisel point on rock, painted with circle and "U. S. B. M. 1171"..... | 1,170.81 |
| Kawaihae, 4.5 miles north of, 100 feet south of large bunch of cactus, 3 small keawi trees on west side of trail, opposite bench mark; chisel point on rock east side of trail, painted with circle and "U. S. B. M. 852".... | 851.29 |
| Kawaihae, 3.5 miles north of, in rocky bed of Kapae Gulch at trail crossing, west side of trail, in huge boulder; bronze tablet stamped "643" (painted "U. S. B. M.")..... | 642.885 |
| Kawaihae, 2.5 miles north of, top of small knoll, 200 feet west of a north-west fence corner, west side of trail, large monument built near bench mark, which is a chisel point on rock, painted with circle, monument painted "U. S. B. M."..... | 490.94 |
| Kawaihae, 2 miles north of, at summit of hill, east side of trail; chisel point on rock, painted "U. S. B. M."..... | 320.11 |
| Kawaihae, 1 mile north of, 200 yards north of Honokoa gulch, at top of sharp rise, east side of trail; chisel point on rock, painted "U. S. B. M.".... | 154.72 |

From point 5.5 miles south of Kohala west 0.6 mile to Puu O Nale triangulation station (single spur line).

Puu O Nale triangulation station, on highest point of Puu O Nale hill, in top of granite post marking station; bronze tablet stamped "1779" . . . 1,777.417 Feet.

From point 1.4 miles east of Kohala north to Kauhola lighthouse (single spur line).

Kauhola lighthouse, in top of Kauhola triangulation station which is granite post about 100 feet southeast of lighthouse; bronze tablet stamped "31" . . . 31.381

From point 1.3 miles west of Kohala, east along road to Makapala (leveled twice).

Kohala, 1.2 miles west of, at forks of Kingsley road (road to Waimea), at foot of black steel standpipe, on concrete wall at outlet; chisel point, painted "U. S. B. M." . . . 554.11

Kohala, 250 feet northeast of, in lower concrete step of Mr. Stillman's old home on seaward side of road, opposite courthouse; bronze tablet stamped "475" . . . 474.666

NOTE.—Above standard bench mark will be moved because of change of grade on road.

Kohala, 180 feet northeast of, at Kamehameha's statute in courthouse yard, on northwest corner of concrete base; bronze tablet stamped "481" . . . 481.252

Kohala, 0.5 mile east of, at forks of road to Dr. Bonds office, southwest corner of road forks, on rock; chisel point, painted "U. S. B. M." . . . 430.12

Kohala, 1 mile east of, bottom of Waianae Gulch, seaward side of road on west side of gulch, in top of gate post. . . . 359.29

NOTE.—The copper bolt has been removed.

Kohala, 1.4 miles east of, at junction of road to Kohala Mill with county road, in northeast corner of road forks, on rock; chisel point, painted "U. S. B. M." . . . 344.44

Kohala, 2.5 miles east of, on concrete culvert over Halawa Gulch, in mountainward side of west end of side wall; bronze tablet stamped "264" . . . 263.683

Kohala, 3.1 miles east of, on seaward side of road, culvert over Walaohia Gulch, on west end of concrete side wall; chisel point, painted "U. S. B. M." . . . 211.78

Makapala, 20 feet west of Lee Wan's store, in root of small eucalyptus tree, on seaward side of road; copper nail. . . . 219.60

NOTE.—In running line it was impossible to hold rod on top of nail on account of growth of tree. Elevation doubtful ± 0.2 foot.

WAIPIO QUADRANGLE.

[Latitude 20°-20° 15'; longitude 155° 30'-155° 45'.]

From Ahualoa Homesteads west along road to point 5 miles east of Waimea (run twice).

Honokaa, 4.5 miles southwest of, on second post east of gate leading to Japanese vegetable gardens; copper nail in top, aluminum tag stamped "2259," painted "U. S. B. M." . . . 2,257.78

Honokaa, 5.25 miles southwest of, on small wooden bridge over gulch, at east end, mountainward side; copper nail in top of railing post, aluminum tag stamped "2391" . . . 2,389.03

Honokaa, 7 miles southwest of, 11 miles east of Waimea (Kamuela post office), 12 feet west of first gate to Parker ranch, opposite white house, mountainward side of road, in top of post which projects 3 feet above ground; copper nail, aluminum tag stamped "2551," painted "U. S. B. M." . . . 2,549.33

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|--|----------------------|
| Waimea post office, 11 miles east of, rocks along road painted "U. S. B. M.," about 30 feet toward sea from road, set in rock with cement; bronze tablet, painted "U. S. B. M." | Feet. 2, 585. 182 |
| Waimea post office, 10 miles east of, 100 feet downstream from old wooden bridge, set in mountain-side parapet of concrete bridge (20-foot span); galvanized spike with head marked +, bridge painted "U. S. B. M." | 2, 705. 56 |
| Waimea post office, 8½ miles east of, about 50 feet mountainward from road; bronze tablet set with cement in rock, painted "U. S. B. M." | |
| Rock on mountain side of road painted "U. S. B. M." with arrow | 2, 782. 06 |
| Waimea post office, 7½ miles east of, about 30 feet mountainward from road, telephone pole on seaward side of road and rock on mountainward side of road, painted "U. S. B. M." with arrow, in rock; bronze tablet | 2, 815. 434 |
| Waimea post office, 7 miles east of; top of lower hinge of new gate to Parker ranch, painted "U. S. B. M." | 2, 797. 037 |
| Waimea post office, 6 miles east of, at seaward edge of road, set in rock with cement; top of short length of ½-inch galvanized pipe, painted "U. S. B. M." | 2, 804. 57 |
| Waimea post office, 5 miles east of, 50 feet west of fork of road to Kukuihaele, 75 feet west of Hamakua ditch, in top of concrete headwall at seaward end of 24-inch pipe culvert; bronze tablet, headwall painted "U. S. B. M." | 2, 814. 105 |
| From Kawela northwest along road to Kukuihaele, thence south along road to point 5 miles east of Waimea (Kamuela post office). | |
| Honokaa, 3 miles northwest of, near old shack on seaward side of road, copper nail in root of blazed tree, on north side of road, painted "U. S. B. M.," aluminum tag stamped "1109" | 1, 105. 36 |
| Honokaa, 4.5 miles northwest of, 3.5 miles southeast of Kukuihaele, west bank of Malauahai Gulch, seaward side of road, 100 yards south of buildings of Japanese camp, in rock; bronze tablet stamped "980," painted "U. S. B. M." | 977. 043 |
| Bridge over Hamakua ditch, 0.4 mile west of above-described permanent bench mark, north end of east side of bridge; 1-inch square chisel hole in top of coping | 962. 30 |
| Kukuihaele, 2.5 miles southeast of, white covered wooden bridge over Kawaikalia Gulch, 50 feet west of, mountainward side of road to Japanese joss house; chisel point on rock, painted "U. S. B. M." | 862. 99 |
| Kukuihaele, 2 miles southeast of, northwest corner of Kaaupahu school-house; chisel point on rock, painted "U. S. B. M." | 851. 10 |
| Kukuihaele, 1.5 miles southeast of, seaward side of road, near Honokaa end of rock fill, near cement culvert over Waikoloa Gulch; chisel point on rock, painted "U. S. B. M." | 761. 42 |
| Kukuihaele, 0.5 mile east of, at end of inclined railroad, 75 feet west of, on north side of road, Kukuihaele plantation warehouse; copper nail in root of tree, aluminum tag stamped "759" | 770. 72 |
| Kukuihaele store, 200 yards west of, forks of road to plantation stables, south side of road, in rock; bronze tablet stamped "730," painted "U. S. B. M." | 730. 059 |
| Kukuihaele store, 1.5 miles west of, at edge of Waipiopali, 200 yards southwest of Jorgensen's residence, at end of wagon road and beginning of trail to Waipio village, south side of road, in rock; bronze tablet stamped "894" | 906. 111 |
| Kukuihaele, 0.5 mile south of, at Waimea road crossing over Hamakua ditch, east side of south end; chisel point on foundation, "U. S. B. M." painted on wooden girder | 980. 57 |

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|--|---------------------|
| Kukuihaele, 3 miles southeast of, at first forks of Waimea road, north side of road; third post from end of fence; copper nail in top, painted "U. S. B. M.," aluminum tag stamped "1494"..... | Feet. 1, 493. 36 |
| Kukuihaele store, 3.25 miles south of, top of small hill known as Puu Mauu, in rock centered over location of old pipe marking triangulation station Puu Mauu; bronze tablet stamped "1629"..... | 1, 629. 327 |
| Kukuihaele, 4.5 miles south of, on west side of road, 300 feet north of south edge of cane lands, 150 yards south of ditch crossing, west side of road and inside of fence; copper nail in ohia stump, aluminum tag stamped "1947," painted "U. S. B. M." on tree..... | 1, 946. 30 |
| Kukuihaele, 5.5 miles south of, 6.5 miles northeast of Waimea, first gate to Parker ranch on "Mud Lane," 100 feet north of, on east side of road, in rock; bronze tablet stamped "2392," painted "U. S. B. M."..... | 2, 391. 670 |

From point 6 miles east of Kawaihae east to point 5 miles east of Waimea.

| | |
|--|-------------|
| Kawaihae, 7 miles east of, 5 miles west of Waimea, 50 feet west of milepost 5-7, 2 feet above roadbed on south side; chisel point on rock, painted with circle and "U. S. B. M."..... | 1, 797. 73 |
| Kawaihae, 8 miles east of, 4 miles west of Waimea, south side of road; copper nail in top of milepost 4-8, aluminum tag painted "U. S. B. M.".... | 2, 022. 24 |
| Kawaihae, 9 miles east of, 3 miles west of Waimea, south side of road; copper nail in top of milepost 3-9, aluminum tag, painted "U. S. B. M.".... | 2, 219. 57 |
| Kawaihae, 10 miles east of, 2 miles west of Waimea, at forks of road to Kohala, 30 feet northwest of black wooden bridge, in concrete covered wing wall of abutment; bronze tablet stamped "2413," painted "U. S. B. M."..... | 2, 413. 380 |
| Waimea, 1 mile west of; copper nail in top of milepost 1-17, aluminum tag, painted "U. S. B. M."..... | 2, 575. 74 |
| Waimea (Kamuela post office), 200 yards north of, 50 feet west of Akona's store, in northeast abutment of black wooden bridge; bronze tablet stamped "2669" "U. S. B. M." painted on bridge..... | 2, 669. 308 |
| Waimea (Kamuela post office), 1.2 miles east of, 150 feet east of small unpainted barn on south side of road, opposite banana grove, 300 feet south-east of brown house with red trimmings; copper nail in stump, 1 foot above ground, painted "U. S. B. M."..... | 2, 774. 41 |
| Waimea (Kamuela post office), 2 miles east of, north side of road; copper nail in top of milepost 2-16, aluminum tag, painted "U. S. B. M."..... | 2, 854. 51 |
| Waimea (Kamuela post office), 3 miles east of; copper nail in top of milepost 3-15, aluminum tag, painted "U. S. B. M."..... | 2, 894. 13 |
| Waimea (Kamuela post office), 3.4 miles east of, 50 feet southwest of fence corner on north side of road, 250 feet northwest of fence corner on south side of road, 20 feet west of telephone pole, in rock; bronze tablet, stamped "2889," telephone pole painted "U. S. B. M.," rock monument painted "U. S. B. M."..... | 2, 888. 702 |
| Waimea (Kamuela post office), 4 miles east of; copper nail in top of milepost 4-14, aluminum tag, painted "U. S. B. M."..... | 2, 868. 59 |

From point 2 miles west of Waimea northwest 5 miles.

| | |
|---|------------|
| Waimea (Kamuela post office), 3 miles northwest of; copper nail in top of milepost 3-22, aluminum tag stamped "2688," painted "U. S. B. M.".... | 2, 685. 21 |
| Waimea (Kamuela post office), 4 miles northwest of; copper nail in top of milepost 4-21, aluminum tag stamped "2949," painted "U. S. B. M.".... | 2, 946. 08 |

| | |
|--|----------------------|
| Waimea (Kamuela post office), 5 miles northwest of, 20 feet southeast of milepost 5-20, in rock; bronze tablet stamped "3164," painted "U. S. B. M." | Feet. 3, 160. 997 |
| Waimea (Kamuela post office), 6 miles north of; copper nail in top of milepost 6-19, aluminum tag stamped "3290," painted "U. S. B. M." | 3, 287. 15 |

From Waimea northwest to Hokuula triangulation station (single spur line).

| | |
|---|-------------|
| Waimea (Kamuela post office), 1 mile north of, on Waimea slope of Hokuula, east side of old wood road or trail; chisel point on rock, painted "U. S. B. M." | 3, 029. 68 |
| Hokuula triangulation station, on west edge of crater and on highest point of crown where a post was found but no pin; kerosene oil can filled with concrete set in ground and tablet set in center over point where stake originally was | 3, 376. 948 |

From Makapala southeast along road to Honokane Nui Gulch (leveled twice).

NOTE.—Two bench marks of Barringer's line at this point are destroyed.

| | |
|--|---------|
| Pololu Gulch, 1,000 feet west of, in front of old Kohala Ditch Co.'s office, on small rise, 25 feet north of road, in bowlder; bronze tablet | 486. 36 |
| Pololu Gulch, bottom of, west side, 100 feet west of schoolhouse, on stone 18 inches square; chiseled point, painted "U. S. B. M." | 5. 71 |
| Low tide 10.00 a. m., Jan. 24, 1911, surface of water | —1. 969 |

NOTE.—Time of tide does not tally with Coast and Geodetic Survey tide tables. Low tide should be about —1 foot (?) (below sea level).

| | |
|--|----------|
| Honokane Nui Gulch, at foot of trail, on east side of stream, in rock ledge; bronze tablet, painted "U. S. B. M.," stamped "27" | 27. 359 |
| Honokane Nui Gulch, 0.5 mile east of, on summit of ridge between Honokane Nui and Honokane Iki gulches, in flat rock with monument built around; bronze tablet, painted "U. S. B. M.," stamped "458" | 457. 646 |

From Kukuiaele northwest to Waimanu Valley (single spur line).

NOTE.—This line was run for topography only and is unchecked.

| | |
|--|-------------|
| Waipio Valley, east side of, at foot of trail, on rock; chiseled square | 8. 610 |
| Waipio Valley, west side of, at third turn of trail, on rock; chiseled square | 220. 32 |
| Kukuiaele post office, 6.51 miles west of, south side of twelfth gulch west of Waipio Valley, seaward side of trail, on rock; circle painted "U. S. B. M." | 1, 252. 494 |
| Waimanu Valley, south side, at top of steep part in trail, seaward side of trail; in white paint on rock, "U. S. B. M." | 1, 287. 504 |
| Waimanu Valley, bottom of, 42 feet in front of old house on south side of stream near beach, 30 feet from stream bank; bronze tablet, not stamped | 9. 480 |

WAIKI QUADRANGLE.

From Waimea south to Holoholoku triangulation station (single spur line).

| | |
|--|-------------|
| Holoholoku triangulation station, in scoria on summit of hill; four redwood posts are set around it to support signals; kerosene can filled with concrete set in ground and around the iron pin; bronze tablet set in concrete exactly over head of pin, rock monument built around mark | 3, 265. 246 |
|--|-------------|

Hilo, Kilauea Crater, and Puna quadrangles.**HAWAII COUNTY.**

The elevations in the following list are based upon a bench mark of the Corps of Engineers, United States Army, at Hilo breakwater, the accepted elevation of which above mean sea level was determined from one year's automatic gage record, June 1, 1911, to May 31, 1912, inclusive.

The leveling was done in Hilo quadrangle in 1910, by W. H. Barringer and in 1912, by J. M. Rawls and S. H. Birdseye; in Puna quadrangle in 1912 by Rawls, and in Kilauea Crater quadrangle in 1912 by Rawls and Birdseye.

HILO QUADRANGLE.

[Latitude 19° 30'-19° 45'; longitude 155°-155° 15'.]

From Hilo breakwater west and north to bench mark 2.3 miles north of Hilo.

| | |
|--|------------------------|
| Hilo, at land end of breakwater, 75 feet east of station O (U. S. C. E. b. m. 7.44 feet above zero of automatic gage as reset February, 1911, by Geo. F. Whittemore, U. S. Army Engineer)..... | Feet. 6. 393 |
| Hilo, land end of breakwater, 70 feet northeast of station O, lava rocks near shore line, 50 feet east of Hilo R. R. tracks, on top of breakwater, in rock and cement; bronze tablet stamped "6.89"..... | 7. 281 |
| Hilo, 0.5 mile south of, at Waiakea, south end of east side of steel bridge over slough; head of bolt in bedplate, aluminum tag not stamped..... | 13. 467 |
| Hilo, 1 mile east of, land end of Hilo wharf, north side of, in center of top of masonry pier 3.5 feet in diameter and covered with cement; bronze tablet stamped "5.79 1910"..... | 6. 183 |
| Hilo, 1 mile east of, 100 yards west of land end of Hilo wharf, in top of sea wall extending out from old Government wharf; bronze tablet stamped "5.83 1910"..... | 6. 228 |
| Territorial Survey b. m. 3; bottom of square hole cut in concrete wall just north of Government wharf (elevation by Territorial Survey 5.39 feet)..... | 6. 073 |
| Hilo, 100 yards east of United States lighthouse, at foot of Waiianuenue Street, in concrete pedestal or foundation of tower; bronze tablet stamped "8.82 1910"..... | 9. 210 |

From Hilo south along automobile road to Keaanu, thence southwest along public road to point near Glenwood (part of a double spur line).

| | |
|---|----------|
| Hilo, 1 mile southeast of, at junction of Volcano road and Lepalepa Street, on concrete base of flag pole; center of circle of white paint, aluminum tag on flag pole, stamped "14.3"..... | 14. 72 |
| Hilo, 2.2 miles south of, about 2,000 feet south of Waiakea Mill, on east side of road, near bunch of breadfruit trees, at base of telephone pole; chisel point on rock, aluminum tag stamped "49.5," telephone pole painted "U. S. B. M."..... | 49. 89 |
| Hilo, 2.5 miles south of, beside gatepost at road leading west, on top of 1-inch pipe flush with ground, aluminum tag on gatepost stamped "71.0"..... | 71. 44 |
| Hilo, 3.2 miles south of, 200 feet north of Waiakea Uka schoolhouse, 60 feet west of gate, 15 feet south of stone fence, in top of rock mound in school yard; bronze tablet stamped "143"..... | 143. 381 |

| | |
|--|------------------|
| Hilo, 4 miles south of, on small wooden culvert, in seaward end of bridge floor; copper nail, aluminum tag stamped "174.6, U. S. B. M." painted on bridge floor..... | Feet. 175. 05 |
| Hilo, 4.9 miles south of, at lone mango tree blazed with triangle on mountainward side of road; spike in base of tree..... | 233. 09 |
| Hilo, 6 miles south of, 0.6 mile south of Youngs road, in rock outcrop on mountainward side of road; bronze tablet stamped "271"..... | 271. 17 |
| Hilo, 6.9 miles south of, 750 feet north of Hilo-Puna boundary signboard, on seaward side of road; copper nail in top of kukui stump, "U. S. B. M." painted on stump..... | 289. 62 |
| Hilo, 7.9 miles south of, 0.8 mile south of Puna-Hilo boundary, on mountainward side of road at sharp bend, at base of rock ledge 15 feet high; chisel point on rock 2 feet above road, rock painted "U. S. B. M.".... | 280. 00 |
| Hilo, 8.9 miles south of, 0.3 mile north of Hilo R. R. crossing, at forks of road to Olas Mill, in northeast corner of road forks; copper nail in root of Pride of India tree, aluminum tag stamped "334.3"..... | 334. 74 |
| Keaau, 770 feet north of station, in yard of Japanese Christian Church, in rock outcrop 50 feet west of road; bronze tablet stamped "359.3"..... | 359. 643 |
| Keaau, at railroad crossing west of station; top of north rail..... | 390. 9 |
| Keaau, 1.2 miles south of, 2,300 feet south of road to Japanese Camp, spike in base of telephone pole, painted "U. S. B. M.," aluminum tag stamped "571.6"..... | 571. 97 |
| Keaau, 2 miles southwest of, 150 feet south of Catholic Church, in fence corner on seaward side of road; copper nail in root of Pride of India tree, painted "U. S. B. M." on fence, aluminum tag stamped "641.6"..... | 641. 93 |
| Keaau, 3.2 miles southwest of, in bottom step of 12-mile schoolhouse; bronze tablet stamped "764"..... | 764. 701 |
| Keaau, 4 miles southwest of, 50 feet south of forks of road leading west, on mountainward side of road; chisel point on rock, painted "902.5"..... | 902. 80 |
| Keaau, 5 miles southwest of, 50 feet south of 14-mile blacksmith shop, on seaward side of road; copper nail in top of large ohia stump, painted "U. S. B. M.," aluminum tag stamped "1061.2"..... | 1, 061. 54 |
| Keaau, 5.5 miles southwest of, at forks of road leading to Kukui R. R. station, on seaward side of road; spike in telephone pole 14 inches above base, painted "U. S. B. M.," aluminum tag stamped "1137.9"..... | 1, 138. 22 |
| Keaau, 6 miles southwest of, 1,150 feet southwest of Japanese joss house, in yard of native's house; copper nail in root of aligator pear tree..... | 1, 233. 16 |
| Keaau, 6.2 miles southwest of, 0.4 mile southwest of Japanese joss house, in rock ledge, on mountainward side of road, 2 feet above road; bronze tablet stamped "1266"..... | 1, 266. 435 |
| Keaau, 6.7 miles southwest of, at crossroads leading to railroad station, beside flagpole; copper nail in top of stump, painted "U. S. B. M.," aluminum tag stamped "1360.1"..... | 1, 360. 45 |
| Mountain View R. R. station, in south end of station platform, east end of third plank; copper nail, aluminum tag stamped "1534.2"..... | 1, 534. 52 |
| Mountain View, 0.7 mile southwest of, at forks of road leading west to Japanese camp, on seaward side of road; chisel point on rock painted "U. S. B. M. 1671.2"..... | 1, 671. 61 |
| Mountain View, 1.3 miles southwest of, in mountainward side of small wooden culvert at flume crossing; copper nail painted "U. S. B. M.," aluminum tag stamped "1799.124"..... | 1, 799. 52 |
| Mountain View, 2 miles southwest of, at Norman Lyman's house, in rock base of front steps to house; bronze tablet stamped "2002"..... | 2, 002. 342 |

From Hilo west and north to Wainaku Mauka camp.

| | |
|--|-------------------|
| Hilo, 1.2 miles west of, at forks of road to north, under flume, on concrete pier on seaward side of crossroad; bronze tablet stamped "379"..... | Feet. 379. 767 |
| Wainaku Mauka camp, at foot of telephone pole, south side of road, 20 feet seaward from gate, in cement pier; bronze tablet stamped "473"..... | 473. 557 |

KILAUEA CRATER QUADRANGLE.

[Latitude 19° 15'-19° 30'; longitude 155° 15'-155° 30'.]

From point near Crater Hotel west along main automobile road into Kilauea crater, thence northeast along trail to Volcano House, thence southeast along government road to Crater Hotel.

| | |
|--|-------------|
| Crater Hotel, 2 miles southwest of, on north side of road at sharp bend; chisel point on rock 2 feet above ground..... | 3, 734. 44 |
| Crater Hotel, 3.25 miles southwest of, at old prisoners' camp, on south side of road at beginning of Crockett's trail, in top of ohia stump; copper nail.. | 3, 756. 41 |
| Crater Hotel, 3.3 miles southwest of, at old prisoners' camp, 200 feet north of road, 650 feet northwest of beginning of Crockett's trail, in large boulder; bronze tablet stamped "3764"..... | 3, 764. 339 |
| Keanakakoi Crater, 500 feet northwest of, 120 feet south of road; chisel point on top of boulder..... | 3, 647. 89 |
| Halemaumau Crater, on southeast edge of, 4 feet northeast of stone rest-house; in top of stone pier; bronze tablet stamped "3697"..... | 3, 696. 994 |
| Halemaumau Crater, on north edge of, inside house of Massachusetts Institute of Technology, in top of concrete pier; bronze tablet stamped "3700"..... | 3, 700. 595 |
| Halemaumau Crater, 0.4 mile east of, 10 feet east of stone corral, north side of trail; circle with white paint..... | 3, 633. 84 |
| Halemaumau Crater, 0.9 mile east of, north side of trail; circle with white paint, painted "U. S. B. M."..... | 3, 544. 99 |
| Halemaumau Crater, 1.9 miles east of, in northeast end of bottom stringer of bridge over large crack in lava; copper nail..... | 3, 490. 24 |
| Volcano House, on secondary triangulation station known as Volcano House Flag, 15 feet west of road, in front of hotel, in top of concrete pier; bronze tablet stamped "3973"..... | 3, 973. 090 |
| Volcano House, 0.7 mile southeast of, crossing of old railroad grade, in top of wooden post on south side of road; copper nail..... | 3, 882. 40 |

From Volcano House west and southwest along or near Kau Road 5.5 miles, thence east to Halemaumau Crater.

| | |
|--|-------------|
| Volcano House, 0.9 mile west of, forks of road leading to Ollie Shipman's ranch house, on north side of road forks, in small ohia tree, about 18 inches above ground; copper nail..... | 3, 997. 29 |
| Volcano House, 2.2 miles west of, Uwekahuna primary triangulation station, in old drill hole in rock marking station and under large tripod; bronze tablet stamped "4088"..... | 4, 088. 261 |
| Volcano House, 2.5 miles west of, 800 feet southeast of government prisoners' camp, on south side of old Kau road; copper nail in root of 6-inch ohia tree, painted "U. S. B. M."..... | 3, 937. 18 |
| Prisoners' camp, 0.9 mile southwest of, on north side of old Kau road, copper nail in root of 10-inch ohia tree, painted "U. S. B. M.", aluminum tag stamped "3802"..... | 3, 802. 48 |
| Prisoners' camp, 2 miles southwest of, east edge of Keamoku lava flow, in rock 10 feet north of 18-inch culvert at small drain crossing; bronze tablet stamped "3632"..... | 3, 631. 971 |

| | |
|--|------------|
| Prisoners' camp, 3 miles southwest of, in southeast corner of crossing of old Peter Lee road and Kau road; chisel point on rock, painted "U. S. B. M." | Feet. |
| | 3, 564. 34 |

From Kau road across country to Cone Flag.

| | |
|--|-------------|
| Cone Flag, 1 mile northwest of; flag in small ohia tree on center of three lava bubbles; copper nail driven in lava 7 feet north of tree..... | 3, 580. 22 |
| Cone Flag, secondary triangulation station, 4 miles southwest of Volcano House, on highest point of rock ridge (tablet replaces galvanized iron spike driven in lava rock which originally marked station); bronze tablet stamped "3653" covered by mound of rock..... | 3, 653. 642 |
| Cone Flag, 1 mile east of, on west edge of smooth flat plateau, at base of flag; chisel point on rock..... | 3, 704. 51 |
| Cone Flag, 1.5 miles east of, on low rim of west edge of Kilauea Crater; ground at base of flag..... | 3, 659. 09 |

From point near Volcano House northwest along Puu Oo trail 3 miles (double spur line).

| | |
|---|-------------|
| Volcano House, 1.3 miles northwest of, Ollie Shipman's ranch house, 150 feet southwest of house; copper nail in root of large koa tree..... | 4, 014. 39 |
| Ollie Shipman's ranch house, 1.3 miles northwest of, north edge of level pasture lands, 6 feet east of wire fence; copper nail in root of large koa tree..... | 4, 018. 38 |
| Ollie Shipman's ranch house, 2.4 miles northwest of, at first rock ledge at north end of second flat, 15 feet south of large koa tree blazed with triangle, 25 feet west of trail, in rock; bronze tablet stamped "4321"..... | 4, 321. 415 |

From point 1.8 miles northwest of Devils Throat northwest along Cockett's trail to old prison camp.

| | |
|---|------------|
| Devils Throat, 1.6 miles northwest of, large crater with active steam crack, on northwest side of crater, between crater and trail; chisel point on top of large boulder..... | 3, 628. 05 |
| Devils Throat, 2.2 miles northwest of, at third crater, on east side of crater and east edge of trail; chisel point on rock, point encircled with white paint..... | 3, 646. 72 |

From Devils Throat southwest to Puu Ohale triangulation station (single spur line to check vertical angles, checked by back-face rod readings).

| | |
|--|-------------|
| Puu Ohale triangulation station, 10 feet south of, in rock surface; bronze tablet stamped "V. A" | 3, 314. 137 |
|--|-------------|

PUNA QUADRANGLE.

[Latitude 19° 15'–19° 30'; longitude 155°–155° 15'.]

From point near Glenwood southwest along automobile road to Crater Hotel (Kilauea volcano) (part of double spur line).

| | |
|---|------------|
| Mountain View, 3.2 miles southwest of, at crossing of small gulch about 300 feet west of old Japanese camp; copper nail in mountainward side of bridge floor, painted "U. S. B. M.," aluminum tag stamped "2126.2" .. | 2, 126. 47 |
| Mountain View, 4.25 miles southwest of, 0.65 mile northeast of Glenwood station, at 21-mile post, on seaward side of road; spike in base of telephone post, painted "U. S. B. M.," aluminum tag stamped "2204" | 2, 204. 22 |
| Glenwood station; on southeast corner of Volcano stables, chisel point in stone foundation, painted "U. S. B. M 2295.2" | 2, 295. 50 |

| | |
|--|----------------------|
| Glenwood station, 0.5 mile southwest of, 1,000 feet southwest of 22-mile post, in ledge 30 inches above road and on mountainward side of road; bronze tablet stamped "2326"..... | Feet. 2, 326. 752 |
| Glenwood station, 1.3 miles southwest of, at 23-mile post, on seaward side of road; chiseled point on stone in rock ledge (bench mark is 2 feet above road), painted "U. S. B. M. 2477.9"..... | 2, 478. 22 |
| Glenwood station, 2.3 miles southwest of, at 24-mile post, on mountainward side of road; chisel point on rock encircled by white paint..... | 2, 669. 63 |
| Glenwood station, 3.3 miles southwest of, 200 feet northeast of 25-mile post, in shelf of rock ledge 5 feet above ground; bronze tablet stamped "2824"..... | 2, 824. 275 |
| Glenwood station, 4.3 miles southwest of, at sixth telephone pole west of beginning of long tangent in road, 8 feet northeast of telephone pole; chisel point on rock..... | 3, 023. 82 |
| Glenwood station, 5.4 miles southwest of, 75 feet east of 27-mile post, on seaward side of road; chisel point encircled with white paint on rock.... | 3, 321. 41 |
| Glenwood station, 6.5 miles southwest of, 200 feet west of 28-mile post, on mountainward side of road, in rock outcrop; bronze tablet stamped "3565"..... | 3, 565. 399 |
| Crater Hotel, 0.6 mile east of, 30 feet north of road, in top of corner fence post at southwest corner of Peter Lees's yard; copper nail..... | 3, 743. 64 |
| Crater Hotel, in concrete base to front steps; bronze tablet stamped "3821"..... | 3, 821. 036 |

From Crater Hotel south along short-cut road to main automobile road.

| | |
|---|------------|
| Crater Hotel, 0.3 mile southwest of, on north side of junction of short-cut road with automobile road from Volcano House; copper nail in top of small ohia stump..... | 3, 870. 78 |
| Crater Hotel, 1 mile south of, at short cut to Keahou road by Twin Craters, on west side of automobile road; copper nail in top of small ohia stump.. | 3, 928. 76 |

From Twin Craters south along Keahou road 3.2 miles, thence west and north to old prison camp (double run circuit).

| | |
|---|-------------|
| Crater Hotel, 1.5 miles south of, at first flag on west side of road; copper nail in top of small ohia stump, aluminum tag stamped "3833.4"..... | 3, 833. 66 |
| Crater Hotel, 2.5 miles southeast of, 2,300 feet south of bottom of steep rise in road, on south edge of rock outcrop; copper nail in rock in circle of red paint, aluminum tag stamped "3589"..... | 3, 589. 08 |
| Crater Hotel, 3.3 miles southeast of, on east side of road; chisel point in circle of white paint on rock, aluminum tag stamped "3340"..... | 3, 439. 89 |
| Junction of Keahou road and Hulu Hulu trail; copper nail in root of ohia tree..... | 3, 269. 30 |
| Crater Hotel, 4 miles southeast of, at junction of Keahou road and Puu Hulu Hulu trail, about 15 feet north of road is small ohia tree blazed, 6 feet west of this tree is cement cylinder set in ground and protruding above surface 6 inches, in top of cylinder; bronze tablet stamped "3269"..... | 3, 269. 690 |
| Crater Hotel, 3.7 miles southeast of, at junction of new cut trail with Keahou road, on south edge of road; copper nail in ohia stump, aluminum tag stamped "3351"..... | 3, 351. 60 |
| Devils Throat. 0.5 mile east of, 100 feet north of large crater on Cockett's trail, 10 feet south of trail; chisel point in circle of white paint, marked "3356.4"..... | 3, 356. 88 |
| Devils Throat, 270 feet east of, on north side of Cockett's trail; chisel point in circle of white paint on top of large boulder..... | 3, 391. 30 |

| | |
|--|----------------------|
| Devils Throat, 270 feet east of, on north side of Cockett's trail, in top of large boulder 4 feet east of above temporary bench mark; bronze tablet stamped "3390" | Feet. 3, 390. 610 |
| Devils Throat, 0.9 mile northwest of, at first crater west, just west of crater is rocky hill, on south edge of trail at nearest point to crater; copper nail in root of ohia tree | 3, 521. 25 |

From forks of Keaouhou road and Kalapaua trail south to Puu Huluhulu triangulation station (single spur line checked by back-rod readings).

| | |
|--|------------|
| Forks of Kalapaua trail and trail to Puu Huluhulu triangulation station, about 900 feet southwest of triangulation station; copper nail in root of 6-inch ohia tree, painted "U. S. B. M." | 3, 242. 38 |
| Puu Huluhulu triangulation station, 0.25 mile south of, at forks of trail to Opeluhaalili crater; copper nail in root of ohia tree, painted "U. S. B. M." | 3, 188. 47 |
| Puu Huluhulu triangulation station, 0.4 mile south of, at old trail crossing; copper nail in root of ohia tree painted "U. S. B. M." | 3, 135. 57 |

From forks of Keaouhou road and Kalapaua trail along trail southeast 0.6 mile (single spur line checked by vertical angles and back-rod readings).

| | |
|--|------------|
| Forks of Keaouhou road and Kalapaua trail, 0.6 mile south of, on west side of road; copper nail in root of tree, painted "U. S. B. M." | 3, 239. 90 |
|--|------------|

KAUAI ISLAND.

Kapaa, Lihue, Na Pali, and Waimea, 15' quadrangles, including area shown on Hanalei, Hanapepe, Kilauea, Kapaa, Lihue, Mana, and Na Pali atlas sheets.

KAUAI COUNTY.

The following elevations are based upon mean sea level through Coast and Geodetic Survey bench mark No. 1 at Eleele Landing. This bench mark is the highest point of the head of an eyebolt set in rocky ledge just north of Eleele Landing, into which is hooked a stay rod. The elevation is 13.90 feet above zero of gage, and 12.24 feet above mean sea level. The tidal observations were made between February 16 and March 11, 1904, the mean range being 1.02 feet.

The leveling was done in 1910 by L. F. Biggs.

KAPAA QUADRANGLE (including area shown on Kapaa and Kilauea atlas sheets).

[Latitude 22°-22° 15'; longitude 159° 15'-159° 30'.]

From 1.2 miles northeast of Hanamaulu northeast along county road to Kealia, thence north to Anahola, thence northwest to Hanalei.

| | |
|---|------------------|
| Hanamaulu, 1.2 miles northeast of, south edge of road, at end of stone fence, opposite end of flume, 150 feet west of end of macadam road, in concrete culvert over irrigation ditch; copper bolt marked "66" | Feet. 65. 873 |
| Hanamaulu, 2 miles northeast of, northeast corner of concrete culvert over irrigation ditch; chiseled point painted "11" | 10. 46 |
| Hanamaulu, 3.1 miles northeast of, south edge of road, where flume crosses road, in base of flume support; copper bolt, aluminum tag stamped "51" | 51. 08 |
| Wailua River, northeast corner of steel bridge, on top of concrete pier; bronze tablet stamped "12" | 11. 882 |

| | |
|---|---------------|
| Wailua River, 1.3 miles northeast of, north end of race track, north edge of road, 150 feet west of frame house; spike in base of telephone pole, aluminum tag stamped "7"..... | Feet. 6.57 |
| Wailua River, 1.8 miles northeast of, northeast corner of concrete bridge over creek, on top of guardrail; copper bolt marked "12"..... | 11.00 |
| Kapaa, northeast corner of concrete bridge over drain; chiseled point painted "12"..... | 11.55 |
| Kapaa, east end of town, 50 feet east of old chimney, northeast corner of concrete culvert; chiseled point painted "11"..... | 10.87 |
| Kealia, west end of town, northeast corner of bridge over Kapaa River; iron bolt on top of concrete pier, painted "11"..... | 10.56 |
| Kealia, 150 feet north of post office, southeast corner of concrete culvert; chiseled point painted "12"..... | 11.68 |
| Kealia, northwest corner of Kealia store, 3 feet above ground, in concrete foundation; bronze tablet stamped "14"..... | 13.790 |
| Kealia, 300 feet west of breakwater, in fence corner, in boulder; bronze tablet stamped "18"..... | 18.128 |
| Kealia, 0.4 mile northeast of, south edge of road, on summit of steep grade; chisel point in milepost 11, painted "121"..... | 120.48 |
| Kealia, 1.4 miles northeast of, opposite junction of road to east; spike in base of telephone pole, aluminum tag stamped "242"..... | 241.62 |
| Kealia, 2.7 miles north of, at crossroads, northeast corner of cane field; chisel point on boulder, painted "425"..... | 424.81 |
| Kealia, 3 miles north of, at road junction; chisel point on stone culvert, painted "378"..... | 377.75 |
| Kealia, 3 miles north of, at road junction, east side of road, north side of ditch, in 6-inch tube of cement; bronze tablet stamped "377"..... | 377.131 |
| Kealia, 3.5 miles north of, opposite second-class road, on east bank of gulch; chisel point in milepost 14, painted "312"..... | 311.46 |
| Anahola, 500 feet east of church, opposite junction of road to landing, north edge of road; chisel point on boulder, painted "70"..... | 70.09 |
| Anahola, northeast corner of bridge over Anahola River; chisel point on top of concrete pier; aluminum tag stamped "18"..... | 17.43 |
| Anahola, 1 mile north of, west edge of road, 100 feet south of row of ironwood trees, at east end of stone fence; chisel point on boulder, painted "137"..... | 136.66 |
| Anahola, 1.4 miles north of, west end of concrete culvert over small creek, 250 feet north of small cabin; chisel point on culvert, painted "78," aluminum tag stamped "78"..... | 78.27 |
| Anahola, 2 miles north of, east edge of road; chisel point on top of milepost 17, painted "205"..... | 204.52 |
| Anahola, 3.1 miles north of, west edge of road, 200 feet north of second-class road west, 250 feet south of milepost 18; spike in base of telephone pole, aluminum tag stamped "256"..... | 255.42 |
| Milepost 18; chisel point in, painted "266"..... | 265.67 |
| Anahola, 4.1 miles north of, east side of road, 75 feet west of cabin, at new road; spike in base of ironwood tree, aluminum tag stamped "134"..... | 133.99 |
| Koolau schoolhouse, southwest corner of schoolyard, on top of iron pipe; aluminum tag stamped "321"..... | 321.24 |
| Koolau schoolhouse, southwest corner of schoolyard, in 6-inch tube of cement; bronze tablet stamped "320"..... | 319.824 |
| Koolau schoolhouse, 1 mile northwest of, 250 feet north of plantation stable, north side of road; spike in root of tree, aluminum tag stamped "295".... | 295.24 |

| | |
|---|-----------------|
| Koolau schoolhouse, 2 miles northwest of; copper bolt in top of milepost 22, aluminum tag stamped "299"..... | Feet. 298.75 |
| Koolau schoolhouse, 2.9 miles northwest of; copper bolt in top of milepost 23, aluminum tag stamped "310"..... | 310.19 |
| Kilauea River, southeast corner of bridge, 50 feet east of junction of road to mill, 200 feet south of church; top of bolt on brace, painted "294"..... | 294.01 |
| Kilauea River, 300 feet east of, southeast corner of church yard, north edge of road, in 10-inch tube of cement; bronze tablet stamped "296"... | 295.475 |
| Kilauea River, 0.8 mile west of, 300 feet east of schoolhouse, in fence corner; chisel point on cement monument, aluminum tag stamped "279"..... | 278.48 |
| Kalihiwai River, 25 feet northeast of, on east margin of road, set in bed rock; bronze tablet stamped "15"..... | 15.027 |
| Hanalei, 4 miles east of, north edge of road, at fence corner; spike in fence post, aluminum tag stamped "294"..... | 294.18 |
| Hanalei, 3.4 miles east of, at gate to corral, on top of lower hinge; aluminum tag stamped "348"..... | 347.90 |
| Hanalei, 2.2 miles east of, at road junction, large gate to field; spike in post, aluminum tag stamped "328"..... | 327.75 |
| Hanalei, northwest corner of bridge over Hanalei River, on top of stone abutment; bronze tablet stamped "17"..... | 17.035 |
| Hanalei; northwest corner of stone step of Hanalei Hotel, marked "11"..... | 10.70 |
| Hanalei, 200 feet northwest of hotel and post office, south side of road, on fence line, set in top of concrete pier; bronze tablet stamped "12"..... | 11.574 |

From Kealia along plantation railroad north to Anahola.

| | |
|---|--------|
| Kealia landing, northwest corner of pier; spike in floor..... | 3.73 |
| Kealia, 0.8 mile northeast of, southeast corner of railroad trestle; bolt head, painted "36"..... | 36.13 |
| Kealia, 1.7 miles northeast of, south end of railroad trestle, 600 feet south of tunnel; bolt head, painted "54"..... | 53.62 |
| Kealia, 2.6 miles northeast of, northeast corner of cement wall around cattle guard; chisel point, painted "54"..... | 54.15 |
| Anahola landing, 1 mile south of, at lighthouse; top of eyebolt set in concrete, stamped "25"..... | 24.82 |
| Anahola lighthouse, 30 feet north of, in concrete foundation of brace; bronze tablet, stamped "24"..... | 24.425 |

From Kealia west and south to east slope of Kilauea Crater.

| | |
|--|---------|
| Kealia, 0.7 mile west of, 1,000 feet north of school, 3 feet from telephone pole; aluminum tag, stamped "129"..... | 129.40 |
| Kealia schoolhouse, 1.2 miles west of, 5 feet west of road, 30 feet north of railroad cut; chisel point on bowlder, painted "239"..... | 239.22 |
| Kealia schoolhouse, 2.2 miles west of, at plantation house; spike in base of flag pole, aluminum tag stamped "307"..... | 307.04 |
| Kealia schoolhouse, 2.2 miles west of, 0.7 mile southwest of where irrigation ditch crosses road, 15 feet south of large gate; chisel point on corner of stone ditch, painted "333"..... | 332.88 |
| Kealia schoolhouse, 2.2 miles northwest of (2.5 miles west of?), at reservoir, north end of platform to water gate; spike in post, aluminum tag stamped "369"..... | 369.14 |
| Kealia schoolhouse, 2.2 miles northwest of (2.5 miles west of?), at reservoir, north end of platform to water gate, in 6-inch tube of cement; bronze tablet stamped "369"..... | 369.378 |

| | |
|---|-------------------|
| Kealia schoolhouse, 2.2 miles west of, 0.6 mile southwest of reservoir, 50 feet east of road; top of iron pipe, stamped "468" | Feet. 468. 244 |
| Kealia schoolhouse, 2.2 miles west and 4.2 miles south of, 0.5 mile north of Nonou Mountain; spike in base of hau tree, aluminum tag stamped "355" | 357. 62 |
| Wailua River, on north bank of, in direct line between Nonou and Puu Pilo mountains, where trail goes down to river; chisel point on bowlder, painted "318" | 320. 83 |
| Ashoaka Mountain, west slope of, 1.5 miles north of Wailua Falls, 500 feet northeast of house, at gate in stone fence; spike in base of post, aluminum tag stamped "357" | 360. 35 |
| Wailua River, 200 feet north of falls, northeast corner of bridge; chisel point on concrete pier, painted "287" | 289. 60 |
| Wailua River, 200 feet north of falls, northeast corner of stone abutment of bridge; bronze tablet, stamped "290" | 289. 652 |
| Wailua River, 0.7 mile west of, 0.5 mile west of steel railroad bridge, north edge of road; chisel point on concrete culvert, painted "347" | 359. 82 |
| Wailua River, 1.3 miles south of, at junction of Wailua Falls and Kilohana Crater roads; chisel point on large lava bowlder, painted "374" | 374. 20 |
| Junction of Wailua Falls and Kilohana Crater roads, 0.8 mile west of, on south edge of road; chisel point on concrete culvert, painted "456" | 459. 45 |
| Junction of Wailua Falls and Kilohana Crater roads, 1.4 miles southwest of, south edge of road, on south bank of canyon, at junction of road to south; chisel point on bowlder, painted "491" | 493. 70 |
| East slope of Kilohana Crater, east edge of road, north bank of canyon, at fence corner; spike in base of fence post, aluminum tag stamped "773" | 774. 26 |
| Kilohana Crater, 1.4 miles east of, at large gate; spike in base of gatepost, aluminum tag stamped "933" | 934. 45 |

From Hanamaulu to Kalepa triangulation station (part of line).

| | |
|---|----------|
| Kalepa triangulation station, 15 feet south of monument; chisel point on bowlder, painted "706" | 705. 65 |
| Kalepa triangulation station, in 6-inch tube set 2 inches above ground; bronze tablet stamped "710" | 709. 418 |

From point 2.2 miles east of Hanalei south along road and trail to junction of Wailua Falls and Kilohana Crater roads.

| | |
|--|-------------|
| Hanalei, 3 miles southeast of, 1.5 miles south of road junction, at fence corner; spike in fence post, aluminum tag stamped "387" | 387. 15 |
| Hanalei, 4.5 miles southeast of, southwest corner of small white house; spike in base of large tree, aluminum tag stamped "635" | 634. 70 |
| Hanalei, 5 miles southeast of, where power line crosses road, at junction of road and trail; spike in base of power pole, aluminum tag stamped "827" | 826. 98 |
| Hanalei, 5.9 miles south of, on trail along power line, 6 feet south of fence, in large bowlder; bronze tablet stamped "1012" | 1, 011. 858 |
| Hanalei, 7.2 miles south of; spike in base of first power pole south of line tender's cabin, aluminum tag stamped "1310" | 1, 303. 50 |
| Hanalei, 8.2 miles south of, 0.9 mile south of line tender's cabin; spike in base of power pole, aluminum tag stamped "1525" | 1, 524. 32 |
| Hanalei, 9.6 miles south of, at summit of pass at point called Kualapa; spike in base of power pole, aluminum tag stamped "2127" | 2, 127. 15 |
| Hanalei, 9.6 miles south of, at summit of pass at point called Kualapa, 2 feet north of power pole, east edge of trail, in 6-inch tube of cement set flush with ground; bronze tablet stamped "2127" | 2, 127. 351 |

| | |
|--|--------------------|
| Summit of pass, 1.4 miles south of; spike in base of power pole, aluminum tag stamped "1399" | Feet.. 1,399.05 |
| Summit of pass, 2.4 miles south of, where power line crosses trail; spike in base of stump, aluminum tag stamped "1266" | 1,265.28 |
| Wailua Falls, 5.5 miles northwest of; spike in base of power pole, aluminum tag stamped "855" | 865.71 |
| Wailua Falls, 3.9 miles northwest of, 50 feet east of power line at corral; spike in base of tree, aluminum tag stamped "603" | 612.91 |
| Wailua Falls, 3.9 miles northwest of, 50 feet east of power line, 0.3 mile northeast of Hanahanapuni, at fence line, west end of gate, in 6-inch tube of cement; bronze tablet stamped "612" | 612.409 |
| Wailua Falls, 2 miles northwest of, 20 feet south of large gate at end of cane field; chisel point on large boulder, painted "451" | 461.02 |
| Wailua Falls, 0.9 mile northwest of, at end of railroad track, at large gate; spike in base of gate post, aluminum tag stamped "375" | 384.55 |

From Kapala northwest to Wailua Falls and Kiloana Crater road (part of line).

| | |
|--|--------|
| Kapaia, 1.4 miles northwest of, where railroad crosses road; spike in base of telephone pole, aluminum tag stamped "293" | 292.68 |
| Kapaia, 2 miles northwest of junction of second-class road; spike in base of gate post, aluminum tag stamped "329" | 329.80 |

LIHUE QUADRANGLE (including area shown on Lihue atlas sheet).

[Latitude 21° 45'-22°; longitude 159° 15'-159° 30'.]

From a point 3.5 miles northeast of Homestead post office east to a point 0.6 mile northeast of Hanamaulu.

| | |
|---|---------|
| Homestead post office, 3.5 miles northeast of, on short-cut road to Lihue, 0.3 mile west of, southwest corner of pineapple plantation, southwest corner of concrete bridge over drain; chisel point painted "451" | 451.43 |
| Homestead post office, 3.8 miles northeast of, east end of gate to field road, opposite northeast corner of pineapple plantation; spike in post, aluminum tag stamped "487" | 516.46 |
| Homestead post office, 5.3 miles northeast of, 250 feet southeast of power line, 200 feet south of jog in fence line; spike in base of fence post, aluminum tag stamped "687" | 687.28 |
| Homestead post office, 6 miles northeast of, at junction of main road and northeast end of short-cut road to Lihue, in concrete culvert; bronze tablet stamped "623" | 622.760 |
| Homestead post office, 6.9 miles northeast of, 0.9 mile north of junction of short-cut road, where telephone line crosses road; spike in base of telephone pole, aluminum tag stamped "564" | 563.36 |
| Lihue, 5.5 miles northwest of, northwest corner of steel bridge over Huleia River; bolt in top of cover plate, painted "336" | 336.091 |
| Lihue, 4.1 miles northwest of, south edge of road, at head of small canyon; spike in base of fence post, aluminum tag stamped "481" | 481.58 |
| Lihue, 4.1 miles northwest of, south edge of road, at head of small canyon, in 6-inch tube of cement; bronze tablet stamped "481" | 481.192 |
| Lihue, 3.4 miles northwest of, south edge of road at T road south; spike in base of telephone pole, aluminum tag stamped "389" | 389.04 |
| Lihue, 2.2 miles northwest of, 0.5 mile west of A. S. Wilcox's residence, south side of road on brow of hill; spike in base of fence post, aluminum tag stamped "334" | 333.51 |

| | |
|--|------------|
| Lihue, 1.7 miles northwest of, opposite lane to residence of A. S. Wilcox; spike in base of telephone pole, aluminum tag stamped "319"..... | 319.03 |
| Lihue, 0.6 mile northwest of, at crossroad, 0.5 mile west of sugar mill; spike in base of telephone pole, aluminum tag stamped "225"..... | 224.48 |
| Lihue, 25 feet north of post office, concrete wall around flower beds, at base of telephone pole; copper bolt set in concrete wall, stamped "205"..... | 206.140 |
| Lihue, 370 feet southeast of post office, 25 feet south of band stand, southwest corner of Lihue Park grounds, in concrete pier; bronze tablet stamped "207"..... | 206.470 |
| Lihue, 0.8 mile northeast of, at road junction, 500 feet west of church, at corner of stone fence; chisel point on rock, painted "222"..... | 222.41 |
| Lihue, 1.3 miles northeast of, on northwest corner of steel bridge over Hanamaulu River; bolt head on top of bearing plate, painted "89"..... | 88.961 |
| Hanamaulu, at junction of road, where railroad crosses road, 200 feet south of store; spike in base of telephone pole, aluminum tag stamped "175"..... | 175.06 |
| Hanamaulu, 0.6 mile northeast of, north edge of road at junction of second-class road through cane field, where telephone line crosses to south side of road; chisel point on boulder, painted "74"..... | 73.80 |
| From point 0.6 mile northwest of Lihue post office along roads to Nawiliwili, thence north to Lihue post office. | |
| Lihue post office, 1.2 miles southwest of, back road to landing, north end of ironwood tree, at entrance of lane; spike in base of fence post, aluminum tag stamped "207"..... | 206.57 |
| Lihue post office, 0.5 mile south of, at entrance to Fairview Hotel; chisel point on curb of sidewalk, painted "172"..... | 171.66 |
| Lihue post office, 25 feet north of; copper bolt in concrete wall around flower bed, painted "205"..... | 206.140 |
| Lihue, 100 feet northeast of courthouse; copper bolt in concrete foundation of flagpole, stamped "139"..... | 139.13 |
| Nawiliwili landing, southwest corner of bridge over Nawiliwili River; bolt head at top of bearing plate, aluminum tag stamped "10"..... | 8.89 |
| Nawiliwili landing, southwest corner of churchyard, in concrete step on culvert; bronze tablet stamped "13"..... | 12.865 |
| Nawiliwili landing, 0.6 mile north of, east edge of road; chisel point on concrete culvert of irrigation ditch, painted "150"..... | 149.44 |
| From point 1.4 miles east of Kilohana Crater south to a point 4.1 miles northwest of Lihue post office. | |
| Kilohana Crater triangulation station, set in top of 10-inch pipe filled with cement; bronze tablet stamped "1133"..... | 1, 133.564 |
| Kilohana Crater, 0.5 mile southeast of, 0.4 mile south of mountain house; spike in fence post, aluminum tag stamped "964"..... | 966.86 |
| Kilohana Crater, 1.3 miles south of; spike in fence post, aluminum tag stamped "728"..... | 731.24 |
| From point 1.1 miles east of Lawai River northeast to point 6 miles northeast of Homestead post office. | |
| Lawai River, 1.1 miles east of, 50 feet north of store, 25 feet south of track; spike in base of telephone pole, aluminum tag stamped "85"..... | 84.84 |
| Lawai, East Section, 0.8 mile east of road crossing, 200 feet east of switch; spike in base of telephone pole, aluminum tag stamped "47"..... | 47.00 |

| | |
|--|-------------------|
| Koloa, southeast corner of school yard, set in top of concrete pier; bronze tablet stamped "182" | Feet. 182. 623 |
| Koloa, opposite sugar mill, northwest corner of bridge, in top of concrete pier; copper bolt stamped "211" | 209. 704 |
| Koloa, 0.7 mile north of, east edge of road, on summit of grade; spike in base of telephone pole, aluminum tag stamped "310" | 310. 47 |
| Koloa, 1.9 miles north of, southwest corner of bridge, 400 feet north of second-class road; spike in floor, aluminum tag stamped "425" | 425. 17 |
| Koloa, 2.3 miles north of, at forks of road; spike in base of telephone pole, aluminum tag stamped "553" | 553. 58 |

From Hanamaulu toward Kalepa triangulation station (see Kapaa quadrangle for Kalepa triangulation station).

| | |
|---|---------|
| Hanamaulu, 0.4 mile north of, south end of stone fence; chisel point on rock, painted "270" | 269. 55 |
|---|---------|

From Kapala north to junction of Kilohana Crater and Wailua Falls roads (part of line).

| | |
|--|---------|
| Kapaia, 0.7 mile northwest of, at plantation houses; spike in gatepost, aluminum tag stamped "257" | 256. 55 |
|--|---------|

NA PALI QUADRANGLE (including area shown on Na Pali, Hanalei, and part of Mana atlas sheets).

[Latitude, 22°-22° 15'; longitude, 159° 30'-159° 45'.]

From point 3 miles southwest of Hanalei west to Wainiha.

| | |
|---|----------|
| Waioli River, northwest corner of bridge over; copper bolt in rail brace, aluminum tag stamped "8" | 7. 59 |
| Hanalei, 2 miles southwest of, northwest corner of bridge over slough; top of bolthead, painted "12" | 11. 66 |
| Hanalei, 2.9 miles west of, north edge of road, at sharp bend; spike in fence post, aluminum tag stamped "150" | 149. 72 |
| Lumhai River, northwest corner of bridge; top of bolt, aluminum tag stamped "17" | 16. 89 |
| Wainiha, northwest corner of bridge over Wainiha River; top of bolthead, aluminum tag stamped "14" | 14. 09 |
| Wainiha, northeast corner of Kauai Electric Co.'s powerhouse, 4 feet above ground, set in wall; bronze tablet stamped "101" | 100. 292 |
| Wainiha, 25 feet west of power house, west edge of road, in boulder; bronze tablet stamped "110" | 109. 261 |

From point 3 miles northwest of Kekaha, northwest to point 3 miles north of Mana.

| | |
|---|--------|
| E. A. Knudsen's residence, 1 mile north of, junction of road to pumping station; spike in base of gatepost, aluminum tag stamped "32" | 31. 99 |
| E. A. Knudsen's residence, 2.5 miles north of, at junction of second-class road; spike in base of gatepost, aluminum tag stamped "14" | 13. 76 |
| E. A. Knudsen's residence, 3.3 miles north of, at road to pumping station, on top of lower hinge of small gate; aluminum tag stamped "17" | 16. 53 |
| E. A. Knudsen's residence, 4.6 miles north of, 300 feet south of Mana schoolhouse, opposite store; spike in root of tree, aluminum tag stamped "10" | 10. 32 |
| Mana schoolhouse, northeast corner of school yard, in 6-inch tube of cement; bronze tablet stamped "10" | 9. 840 |

| | |
|--|--------|
| Mana schoolhouse, 1.4 miles north of, large frame house; spike in base of gatepost, aluminum tag stamped "9" | 8.50 |
| Mana schoolhouse, 2.5 miles north of, at large gate across road; spike in gatepost, aluminum tag stamped "8" | 7.49 |
| Mana schoolhouse, 2.9 miles north of, 500 feet north of railroad crossing, 150 feet west of road, 10 feet east of iron pipe; chisel point on rock, painted "35" | 35.43 |
| Mana schoolhouse, 2.9 miles north of, 500 feet north of railroad crossing, 150 feet west of road, at secondary triangulation station, in 6-inch tube of cement; bronze tablet stamped "36" | 35.623 |

From Camp Nine northeast to intake of Olokele ditch (single spur line).

| | |
|---|-----------|
| Camp Nine, 0.6 mile north of, 50 feet south of large gate, at end of cane field; spike in bridge over drain, aluminum tag stamped "1170" | 1,169.74 |
| Camp Nine, 3.5 miles northeast of, 50 feet south of road, at opening in tunnel, 200 feet south of forks of trail, on concrete sill of ditch; chisel point, painted "1412" | 1,412.18 |
| Camp Nine, 3.6 miles northeast of, 400 feet south of opening in tunnel where trail goes over hill; chisel point on boulder, painted "1417" | 1,417.44 |
| Camp Nine, 4.3 miles northeast of; chisel point on boulder, painted "1538" | 1,538.06 |
| Camp Nine, 4.5 miles northeast of, on short sharp ridge above house in bottom of canyon; chisel point on boulder, painted "1467" | 1,467.18 |
| Olokele ditch, 3.8 miles west of intake, opposite ditch tender's cabin, set in retaining wall of ditch; bronze tablet stamped "1427" | 1,426.549 |
| Olokele ditch, 2.7 miles west of intake; spike in base of tree, aluminum tag stamped "1437" | 1,434.60 |
| Olokele ditch, 1 mile west of intake; spike in base of tree, aluminum tag stamped "1411" | 1,409.06 |
| Olokele ditch, 30 feet south of intake, on top of concrete retaining wall of flood gates; bronze tablet stamped "1477" | 1,477.165 |

From point 1.5 miles northwest of Kekaha, northeast along road and trail via Puu Ka Pele to Wainiha Bluff (single spur line).

| | |
|---|-----------|
| E. A. Knudsen's residence, 2 miles north of, 25 feet east of second-class road; chisel point on boulder, painted "1137" | 1,136.60 |
| E. A. Knudsen's residence, 2.9 miles northeast of, north edge of road, 500 feet west of fence; chisel point on boulder, painted "1538" | 1,537.21 |
| E. A. Knudsen's residence, 4.5 miles north of, at cluster of koa trees; copper bolt in root of tree, aluminum tag stamped "2129" | 2,129.09 |
| E. A. Knudsen's residence, 5 miles northeast of, west edge of road, in large lava boulder; bronze tablet stamped "2320" | 2,319.321 |
| E. A. Knudsen's residence, 6 miles northeast of, 25 feet northwest of road; spike in base of tree, aluminum tag stamped "2620" | 2,620.10 |
| E. A. Knudsen's residence, 6.7 miles northeast of, west edge of road; on point of ridge; copper bolt in root of koa tree, aluminum tag stamped "2977" | 2,977.085 |
| Puu Ka Pele, 0.8 mile south of, west of road, at sharp bend; chisel point on boulder, painted "3296" | 3,296.30 |
| Puu Ka Pele, west slope of, west edge of road; chisel point on large boulder, painted "3448" | 3,448.14 |
| Puu Ka Pele triangulation station, on top of iron pipe 8 inches above ground, painted "3661" | 3,661.746 |

| | |
|--|----------------------|
| Puu Ka Pele triangulation station, 40 feet east of, in large lava boulder; bronze tablet stamped "3657" | Feet. 3, 656. 981 |
| Puu Ka Pele, 0.9 mile north of, west edge of road; chisel point on boulder, painted "3491" | 3, 491. 36 |
| Puu Ka Pele, 2 miles north of, 10 feet south of large gate; chisel point on large boulder, painted "3434" | 3, 434. 55 |
| Puu Ka Pele, 2.8 miles north of, at junction of road to Fryer's summer cottage; copper bolt in root of kau tree, aluminum tag stamped "3645" . . . | 3, 645. 52 |
| Knudsen summer cottage, 0.5 mile east of, at junction of trails; spike in base of kau tree, aluminum tag stamped "3695" | 3, 694. 70 |
| Puu Ka Pele, 4.7 miles north of, 0.2 mile west of Hansens camp, at gate to pasture, in large boulder; bronze tablet stamped "3545" | 3, 544. 029 |
| Hansens camp, 1 mile north of, east edge of trail, on summit of ridge; spike in base of lehue tree, aluminum tag stamped "3757" | 3, 755. 60 |
| Hansens camp, 1.3 miles northeast of, east edge of trail; spike in root of stump, aluminum tag stamped "3614" | 3, 613. 70 |
| Kauaikinana River, on west bank of canyon, 150 feet above river, where trail makes sharp bend to north; spike in base of tree, aluminum tag stamped "3375" | 3, 375. 42 |
| Kauaikinana River, 0.5 mile northeast of, at junction of trail to Dodge camp; spike in base of tree, aluminum tag stamped "3723" | 3, 722. 66 |
| Kawaikoi River, 0.3 mile west of, west edge of meadow, west edge of trail; spike in base of tree, aluminum tag stamped "3932" | 3, 931. 67 |
| Kawaikoi River, north bank of, where trail goes up ridge; spike in root of tree, aluminum tag stamped "3694" | 3, 694. 74 |
| Kawaikoi River, south bank of, in large boulder, on north edge of trail; bronze tablet stamped "3692" | 3, 692. 807 |
| Kawaikoi River, 0.4 mile north of, west edge of first swamp, west edge of trail; spike in base of tree, aluminum tag stamped "4019" | 4, 011. 95 |
| West edge of Alakai swamp, east edge of trail; spike in base of small lihua tree, aluminum tag stamped "4040" | 4, 024. 06 |
| Northeast edge of swamp, on bluff above Wainiha, north edge of trail; spike in base of tree, aluminum tag stamped "4022" | 4, 021. 92 |
| Northeast edge of swamp, 30 feet west of edge of bluff above Wainiha, set in boulder; bronze tablet stamped "4023" | 4, 022. 725 |

WAINEA QUADRANGLE (including area shown on Manapepe and part of Mana atlas sheets).

[Latitude 21° 45'-22°; longitude 159° 30'-159° 45'.]

From Eleele landing along county road northeast to point 2.4 miles northeast of Homestead post office.

| | |
|--|---------|
| Eleele, McBride Co.'s warehouse, northwest corner, on cement foundation; chiseled cross (U. S. C. E. b. m.) | 28. 863 |
| Copper bolt set 4 inches from above bench mark, stamped "U. S. B. M. 29". | 28. 870 |
| Eleele landing, 150 feet south of McBride warehouse, 100 feet north of flagpole, 30 feet east of breakwater, in top of concrete pier; bronze tablet .. | 34. 667 |
| Eleele landing, base of flagpole (U. S. C. E. b. m.) | 31. 520 |
| Eleele, 0.5 mile northeast of, 250 feet southwest of McBride warehouse, J. I. Silvias store at road junction; spike in base of telephone pole, marked "86" | 86. 30 |
| Eleele, 0.7 mile northeast of, 150 feet southwest of McBride plantation store, opposite junction of road to McBride sugar mill; at corner of stone fence; chisel point on large boulder, painted "159" | 158. 49 |

| | |
|--|------------------|
| Eleele, 1.5 miles northeast of, at junction of main road between Waimea and Lihue, east margin of road; chisel point on boulder, painted "291". | Feet. 291. 10 |
| Eleele, 2.5 miles northeast of, on main road between Waimea and Lihue, at junction of second-class road, on brow of short sharp pitch in road, where irrigation ditch crosses road; spike in base of telephone pole, aluminum tag stamped "479". | 478. 61 |
| Eleele, 3.4 miles northeast of, 1,000 feet north of concrete bridge, west end of rock fence, south bank of canyon; chisel point on rock, painted "498". | 497. 52 |
| Eleele, 3.9 miles northeast of south edge of road, 50 feet west of crossroads; copper bolt in lava boulder, stamped "631". | 631. 434 |
| Eleele, 4.7 miles northeast of, 1,000 feet north of Homestead Catholic Church, at crossroads; chisel point on property line corner stone, aluminum tag stamped "701". | 700. 46 |
| Homestead, 300 feet west of post office, at T road south, south side of road, in 6-inch tube of concrete; bronze tablet stamped "700". | 700. 046 |
| Homestead post office, 0.7 mile northeast of, northeast corner of concrete bridge over small creek; chisel point, painted "517". | 517. 14 |
| Homestead post office, 1.2 miles northeast of, southwest of concrete culvert; chisel point, painted "400". | 439. 82 |
| Homestead post office, 2 miles northeast of, 300 feet west of Kauai Fruit & Land Co.'s cannery, southwest corner of concrete bridge; bronze tablet stamped "436". | 436. 224 |
| Homestead post office, 2.4 miles northeast of, at junction of main road and short cut to Lihue, where flume crosses road; chisel point on boulder, painted "544". | 544. 40 |

From Eleele landing east along railroad to point 0.5 mile east of Lawai River.

| | |
|--|---------|
| Eleele landing, northwest corner of foundation of McBride warehouse; copper bolt set in concrete, stamped "29". | 28. 877 |
| Eleele landing, 1.7 miles east of, at McBride plantation stables, 50 feet north of barn; spike in base of power pole, aluminum tag stamped "173". | 173. 00 |
| Wahiawa sugar mill, opposite north end of round house; spike in base of power pole, aluminum tag stamped "207". | 207. 13 |
| Wahiawa sugar mill, 1 mile east of, at east end of cane field, where railroad makes sharp bend; spike in base of telephone pole, aluminum tag stamped "235". | 234. 53 |
| Wahiawa sugar mill, 1.6 miles east of, north end of railroad bridge; copper bolt in floor, aluminum tag stamped "234". | 233. 69 |
| Wahiawa sugar mill, 2.4 miles east of, where railroad crosses inverted siphon; chisel point on concrete culvert, painted "234". | 233. 73 |
| Lawai, West Section, at point of switch, 200 feet north of stables; spike in base of telephone pole, aluminum tag stamped "203". | 202. 97 |
| Lawai River, on north bank of canyon, at road crossing, 25 feet east of track; chisel point on boulder, painted "123". | 123. 11 |
| Lawai River, west end of railroad bridge, 1,000 feet north of pumping station; spike in base of power pole, aluminum tag stamped "47". | 46. 78 |
| Lawai River, 0.5 mile east of, 10 feet north of track, at road crossing, at corner of stone fence; chisel point on boulder, painted "128". | 128. 32 |

From Eleele landing northwest along roads through Waimea and Kekaha to point near E. A. Knudsen's residence (double line).

| | |
|---|--------|
| Hanapepe River, on beach at mouth of, top of iron bolt set in concrete.... | 2. 06 |
| Hanapepe River, southeast corner of bridge over; bolt head on brace, aluminum tag stamped "11". | 10. 93 |

| | |
|---|-----------------|
| Eleele landing, 2.1 miles west of, 50 feet west of railroad crossing, north edge of road; spike in base of telephone pole, aluminum tag stamped "136"..... | Feet. 136.06 |
| Eleele landing, 2.5 miles west of, summit of hill, at gate 12 to cornfield; spike in gate post, aluminum tag stamped "194"..... | 194.24 |
| Eleele landing, 2.9 miles west of, west end of plantation house, at junction of road to east; chisel point on boulder, painted "195"..... | 194.44 |
| Makaweli, 0.5 mile east of Makaweli sugar mill, at crossroad where power line crosses road; spike in base of power pole, aluminum tag stamped "185"..... | 185.27 |
| Makaweli, 0.5 mile north of sugar mill, at crossroad, south side of road, in top of 6-inch tube of cement; bronze tablet stamped "185"..... | 184.772 |
| Waimea, 3.2 miles south of, bend of road, on south bank of canyon, 50 feet east of large gate where telephone line crosses canyon; spike in base of telephone pole, aluminum tag stamped "100"..... | 99.78 |
| Waimea, 1.5 miles south of, junction of roads; chisel point on east end of concrete culvert, painted "21"..... | 21.03 |
| Waimea, 1.1 miles south of, at entrance of lane to Mr. Robinson's residence; chisel point on base of stone gate post, painted "48"..... | 48.19 |
| Waimea, southwest corner of steel bridge over Waimea River, on top of concrete pier; bronze tablet stamped "14"..... | 13.593 |
| Waimea, 500 feet north of courthouse, 75 feet south of road junction, at east entrance road; chisel point on boulder, painted "15"..... | 14.84 |
| Waimea, 50 feet east of courthouse, in top of concrete pier set 2.5 feet in ground, and 1 foot above ground; bronze tablet stamped "9"..... | 9.091 |
| Waimea, 0.9 mile west of, 200 feet west of dairy, north edge of road; spike in root of tree, aluminum tag stamped "8"..... | 7.70 |
| Waimea, 2.1 miles northwest of, southwest corner of bridge; copper bolt in floor, aluminum tag stamped "7"..... | 6.60 |
| Kekaha, 1,300 feet northwest of sugar mill, west edge of road, 100 feet east of post office; copper bolt in root of tree, aluminum tag stamped "8".... | 8.70 |
| Kekaha, 300 feet east of post office, north side of road, in fence corner, set in 6-inch tube of cement; bronze tablet stamped "9"..... | 9.171 |
| Kekaha, 1 mile northwest of, 0.5 mile southeast of E. A. Knudsen's residence, north edge of road where power line crosses road; spike in base of stump, aluminum tag stamped "33"..... | 32.91 |
| E. A. Knudsen's residence, 200 feet south of, northeast corner of bridge at Hoca Creek; top of bolt head, aluminum tag stamped "35"..... | 35.34 |
| E. A. Knudsen's residence, 300 feet south of east abutment of bridge; bronze tablet stamped "34"..... | 33.430 |
| From Hanapepe north along road and trail to Puu Lani triangulation station (single spur line). | |
| Hanapepe, 0.7 mile north of, at railroad crossing; spike in base of fence post, aluminum tag stamped "166"..... | 165.60 |
| Hanapepe, 1.2 miles north of, at road junction; spike in base of fence post, aluminum tag stamped "237"..... | 236.81 |
| Hanapepe, 2.1 miles north of, where main ditch crosses road, northeast corner of bridge; copper bolt in floor, stamped "435"..... | 435.136 |
| Hanapepe, 2.5 miles north of, at large gate across road; spike in post, aluminum tag stamped "566"..... | 566.56 |
| Puu Lani, on east slope of, 300 feet west of road junction, at field gate; spike in base of fence post, aluminum tag stamped "761"..... | 761.31 |
| Puu Lani triangulation station, on top of iron pipe, stamped "1023"..... | 1,023.554 |
| Puu Lani triangulation station, in 10-inch tube of cement set 2 inches above ground; bronze tablet stamped "1023"..... | 1,023.389 |

From point 1.5 miles southeast of Waimea north to Camp Nine (single spur line).

| | Feet. |
|---|----------|
| Francis Gay's residence, 1 mile northeast of, on second-class road at reservoir; spike in base of post at gate A, aluminum tag stamped "384"..... | 385.42 |
| Francis Gay's residence, 1.8 miles northeast of, at Camp Eight; spike in base of telephone pole, aluminum tag stamped "556"..... | 557.30 |
| Camp Eight, 0.6 mile north of; spike in base of telephone pole, aluminum tag stamped "757"..... | 757.73 |
| Camp Eight, 1 mile north of where irrigation ditch crosses road; spike in floor of bridge, aluminum tag stamped "898"..... | 899.23 |
| Camp Eight, 2.2 miles north of, where main ditch crosses road; spike in base of telephone pole, aluminum tag stamped "1031"..... | 1,032.20 |
| Camp Nine, 0.3 mile south of, where main ditch crosses road, 5 feet north of ditch, 500 feet south of cabins, in 6-inch tube of cement; bronze tablet stamped "1032"..... | 1,032.71 |

From point 1 mile northwest of Kekaha to point 0.9 mile north of E. A. Knudsen's residence (single spur line).

| | |
|---|--------|
| E. A. Knudsen's residence, 0.5 mile north of, where power line crosses road; spike in base of power pole, aluminum tag stamped "253"..... | 252.94 |
| E. A. Knudsen's residence, 0.9 mile north of, 100 feet south of reservoir; spike in base of power pole, aluminum tag stamped "561"..... | 560.57 |

APPENDIX.

SECONDARY ELEVATIONS.

Secondary elevations from records and topographic maps of the United States Geological Survey are given below. The figures are approximate only and should not be used for accurate work.

| Locality. | Quadrangle. | Island or county. | Elevation. |
|---|---------------------|-------------------|--------------|
| | | | <i>Feet.</i> |
| Aahooka..... | Kapea..... | Kauai..... | 805 |
| Ahualiku..... | Waimea..... | do..... | 1,224 |
| Alae Crater, bottom of..... | Kilauea Crater..... | Hawaii..... | 2,589 |
| Alealeu triangulation station..... | Na Pali..... | Kauai..... | 3,883 |
| Anahola..... | Kapea..... | do..... | 1,516 |
| Annenue, 4 miles west of Honokaa village and 1 mile south of Government road; bronze tablet in rock marking original station, stamped "1808 V. A." (vertical angle b. m.). | Waipio..... | Hawaii..... | 1,608 |
| Cone Peak..... | Kilauea Crater..... | do..... | 3,653 |
| Eke, high point in upper end of land of Kawaihar 2, about 5 miles northwest of Waimea village. | Waipio..... | do..... | 5,311 |
| Haiku, on small hill about 3,500 feet south of Ninole railroad station; bronze tablet in top of concrete cylinder marking station, stamped "683 V. A." (vertical angle b. m.). | Honomu..... | do..... | 683 |
| Haleula..... | Na Pali..... | Kauai..... | 1,055 |
| Haleone..... | Kapea..... | do..... | 2,006 |
| Hakoe, high point about 2 miles northeast of Waimea Village. | Waipio..... | Hawaii..... | 4,070 |
| Hanahanapuni triangulation station..... | Kapea..... | Kauai..... | 911 |
| Hanalet..... | do..... | do..... | 2,260 |
| Haupt..... | Lihue..... | do..... | 2,280 |
| Hihimanu triangulation station..... | Kapea..... | do..... | 2,262 |
| Hokunui..... | Lihue..... | do..... | 1,605 |
| Hono o Na Pali..... | Na Pali..... | do..... | 3,312 |
| Humuula, on north slope of ridge about 1.2 miles southeast of Ookala, in top of concrete post; bronze tablet stamped "1085 V. A." (vertical angle b. m.). | Hamakua..... | Hawaii..... | 1,085 |
| Iole..... | Kapea..... | Kauai..... | 2,620 |
| Keaha..... | Na Pali..... | do..... | 2,923 |
| Kaala triangulation station, on summit of high hill known as Puu Kaala, 3 miles northeast of Waimea village, in concrete cylinder marking station; bronze tablet stamped "3963 V. A." (vertical angle b. m.). | Waipio..... | Hawaii..... | 3,963 |
| Kehena triangulation station, about 8 miles northwest of Kawaihae, bronze tablet stamped 268 (vertical angle b. m.). | Kohala..... | do..... | 268 |
| Kaanakekua..... | Na Pali..... | Kauai..... | 3,423 |
| Kahili..... | Kapea..... | do..... | 2,569 |
| Do..... | Lihue..... | do..... | 3,076 |
| Kaholo triangulation station, 2 miles west of Ookala and 350 feet south of government road, in top of large concrete post; bronze tablet stamped "952 V. A." (vertical angle b. m.). | Hamakua..... | Hawaii..... | 952 |
| Kaunamau triangulation station..... | Na Pali..... | Kauai..... | 4,086 |
| Kaivilahilahi triangulation station, about 0.3 mile east of Papaaloa post office, in top of large concrete cylinder marking station; bronze tablet stamped "284 V. A." (vertical angle b. m.). | Honomu..... | Hawaii..... | 284 |
| Kaiviki triangulation station, bronze tablet stamped 1210. | do..... | do..... | 1,210 |
| Kalalea..... | Kapea..... | Kauai..... | 3,555 |
| Kalanipuu..... | Lihue..... | do..... | 786 |

| Locality. | Quadrangle. | Island or county. | Elevation. |
|---|-----------------------------|---------------------|-----------------------|
| Ka Lehua Hakihaki | Na Pali | Kauai | <i>Feet.</i> 3,543 |
| Kaliko | Kapaa | do | 4,180 |
| Ka Loko reservoir, water surface | do | do | 727 |
| Kahualea | Lihue | do | 1,816 |
| Kamakeanu | Na Pali | do | 3,870 |
| Kamanu | Kapaa | do | 3,363 |
| Kamaulele | Lihue | do | 1,497 |
| Kamoku triangulation station | Kapaa | do | 763 |
| Kapaliu | Na Pali | do | 2,051 |
| Kapalaou | Waimea | do | 3,273 |
| Kapalikea | Na Pali | do | 1,015 |
| Kapehuala | Kapaa | do | 3,130 |
| Kapohakau | Waimea | do | 1,429 |
| Kapuaa | Na Pali | do | 2,854 |
| Kaukaopua | Kapaa | do | 1,292 |
| Kaumanalehua | do | do | 2,301 |
| Kauku triangulation station, on north side of high hill about 4 miles west of Honoumu, in 9 by 9 by 20 inch rock marking station; bronze tablet stamped "1956 V. A." (vertical angle b. m.). | Honoumu | Hawaii | 1,966 |
| Kaunu-o-kaleihoohe, highest point in Kohala Mountains (marked on Government maps as "Summit"), about 5.5 miles northwest of Waimea village. | Waipio | do | 5,505 |
| Kawalkini | Kapaa | Kauai | 4,170 |
| Kawalewa | do | do | 2,313 |
| Kawalumakua | do | do | 1,670 |
| Kawela triangulation station, in concrete pkr marking original station; bronze tablet stamped "940 V. A." (vertical angle b. m.). | Waipio | Hawaii | 942 |
| Kawellika | Lihue | Kauai | 697 |
| Keanakoi Crater, bottom of | Kilauea Crater | Hawaii | 3,485 |
| Keanapuka | Na Pali | Kauai | 4,094 |
| Keapua | do | do | 4,350 |
| Keawanui triangulation station, about 6 miles northwest of Kawaihae, bronze tablet stamped "101 V. A." (vertical angle b. m.). | Kohala | Hawaii | 101 |
| Kekohi | Kapaa | Kauai | 2,895 |
| Keopaweo | Lihue | do | 1,163 |
| Kikoo triangulation station | Kapaa | do | 1,494 |
| Kilauea Iki Crater, bottom of | Kilauea Crater | Hawaii | 3,130 |
| Kilauea triangulation station | Kapaa | Kauai | 570 |
| Kiloe | do | do | 2,393 |
| Kipole | Na Pali | do | 2,973 |
| Koali | do | do | 4,180 |
| Koholalele primary triangulation station, on east end of flat-topped hill, about 1.2 miles southwest of Kukalau, in top of concrete cylinder marking station; bronze tablet stamped "1506 V. A." (vertical angle b. m.). | Hamakua | Hawaii | 1,506 |
| Kokii | Lihue | Kauai | 1,204 |
| Koloe reservoir, water surface | do | do | 223 |
| Koloakapohu | do | do | 948 |
| Kolopua | Na Pali | do | 1,265 |
| Kowaimanu | Lihue | do | 1,353 |
| Kuaha | Na Pali | do | 3,973 |
| Kullel triangulation station, about 2 miles west of Honokaa village and about 1,700 feet south of Government road, in rock marking station; bronze tablet stamped "1431 V. A." (vertical angle b. m.). | Waipio | Hawaii | 1,433 |
| Leauihahai | Lihue | Kauai | 2,116 |
| Leaukahi triangulation station | do | do | 1,364 |
| Laimi triangulation station, in cane field about 0.8 mile south of Honoumu and 200 feet west of Government road, in top of 12 by 12 by 24 inch rock marking station; bronze tablet stamped "365 V. A." (vertical angle b. m.). | Honoumu | Hawaii | 365 |
| Maheo | Kapaa | Kauai | 2,155 |
| Makana, bronze tablet stamped 1200 | Na Pali | do | 1,200 |
| Makaopuhi Crater, bottom of | Kilauea Crater | Hawaii | 2,080 |
| Makeopihl | Na Pali | Kauai | 4,098 |
| Mamaiahou | do | do | 3,733 |
| Maunahou | do | do | 1,729 |
| Maunapuluo | do | do | 1,729 |
| Moaalele | do | do | 4,054 |
| Naluaikaina | Lihue | do | 1,310 |
| Napau Crater, bottom of (elevation doubtful) | Kilauea Crater | Hawaii | 2,520 |
| Nonou, bronze tablet stamped 1238 | Kapaa | Kauai | 1,238 |
| Ohia | do | do | 1,235 |

| Locality. | Quadrangle. | Island or county. | Elevation. Fet. |
|--|---------------------|-------------------|--------------------|
| Omoa..... | Lihue..... | Kauai..... | 1,234 |
| Oolunali..... | Kapea..... | do..... | 471 |
| Paaahu triangulation station, 1.8 miles south of Paahau mill and 2,000 feet south of Government road, in top of granite post marking station; bronze tablet stamped "1348 V. A." (vertical angle b. m.). | Hamakua..... | Hawaii..... | 1,350 |
| Palehua..... | Na Pali..... | Kauai..... | 4,283 |
| Pali Elele..... | do..... | do..... | 3,160 |
| Palihea..... | Kapea..... | do..... | 2,111 |
| Do..... | Na Pali..... | do..... | 1,333 |
| Papaaloa triangulation station, at forks of road and trail, about 0.8 mile southwest of Papaaloa post office, in top of large concrete cylinder marking station; bronze tablet stamped "917 V. A." (vertical angle b. m.). | Honolulu..... | Hawaii..... | 917 |
| Pau Ka Ele reservoir, water surface..... | Kapea..... | Kauai..... | 405 |
| Pihia..... | Na Pali..... | do..... | 4,260 |
| Pohakea..... | do..... | do..... | 3,355 |
| Pohakea triangulation station..... | Waimea..... | do..... | 1,428 |
| Pohakupale..... | Kapea..... | do..... | 4,383 |
| Pohakupili, bronze tablet..... | do..... | do..... | 2,589 |
| Pooku, bronze tablet..... | do..... | do..... | 460 |
| Punohu triangulation station, on west summit of hill about 3 miles southeast of Mana, in concrete cylinder marking station; bronze tablet stamped "4321 V. A." (vertical angle b. m.). | Waiki..... | Hawaii..... | 4,321 |
| Puohenui..... | Kapea..... | Kauai..... | 500 |
| Puu Aukai..... | Waimea..... | do..... | 1,760 |
| Puu Huluhulu triangulation station, on high hill known as Puu Huluhulu, about 6 miles southeast of Volcano House, in rock ledge about 5 feet south of south base of very large rock mound, center of which is station mark; bronze tablet stamped "3440 V. A." (vertical angle b. m.). | Kilauea Crater..... | Hawaii..... | 3,443 |
| Puu Huluhulu Crater, bottom of..... | do..... | do..... | 3,290 |
| Puu Iliahi..... | Na Pali..... | Kauai..... | 3,337 |
| Puu Io triangulation station, on north end of high hill known as Puu Io, about 8 miles southeast of Waimea village, in concrete cylinder marking station; bronze tablet stamped "4058 V. A." (vertical angle b. m.). | Waiki..... | Hawaii..... | 4,058 |
| Punki..... | Kapea..... | Kauai..... | 1,323 |
| Puu Kamaha..... | Na Pali..... | do..... | 3,970 |
| Puu Keakea..... | Kapea..... | do..... | 1,343 |
| Puu Ki..... | Na Pali..... | do..... | 1,687 |
| Do..... | do..... | do..... | 4,451 |
| Puu Konanae..... | Kapea..... | do..... | 1,428 |
| Puu Laau..... | Na Pali..... | do..... | 3,451 |
| Puu Iioa triangulation station, about 7 miles northwest of Waimea village; bronze tablet stamped 4112 (vertical angle b. m.). | Kohala..... | Hawaii..... | 4,112 |
| Puu Mahou..... | Kapea..... | do..... | 858 |
| Puu Manu..... | Na Pali..... | do..... | 3,205 |
| Puu Nopili..... | do..... | do..... | 1,086 |
| Puu Ohale triangulation station, about 4 miles south of Halemaumau Crater, in rock ledge about 10 feet southwest of flagpole in center of very large rock mound; bronze tablet stamped "3314 V. A." (vertical angle b. m.). | Kilauea Crater..... | Hawaii..... | 3,317 |
| Puu o Miki..... | Kapea..... | Kauai..... | 561 |
| Puu Opa triangulation station..... | Na Pali..... | do..... | 2,147 |
| Puu o Papal triangulation station..... | Waimea..... | do..... | 480 |
| Puu Pa triangulation station, on west side of small crater about 2 miles southwest of Waimea village, in top of granite post marking station; bronze tablet stamped "2677 V. A." (vertical angle b. m.). | Waiki..... | Hawaii..... | 2,677 |
| Puu Pihakapu..... | Lihue..... | Kauai..... | 723 |
| Puu Pili triangulation station, about 10 miles northwest of Waimea village; bronze tablet stamped 4676 (vertical angle b. m.). | Kohala..... | Hawaii..... | 4,676 |
| Uluwaa..... | Kapea..... | Kauai..... | 3,168 |
| Uluhi..... | Lihue..... | do..... | 838 |
| U. S. stream gaging station; in upper end of Land of Kaiwili; bronze tablet stamped 2753. | Honolulu..... | Hawaii..... | 2,753 |
| Wahiawa..... | Waimea..... | Kauai..... | 831 |
| Waihuakua..... | Na Pali..... | do..... | 3,950 |

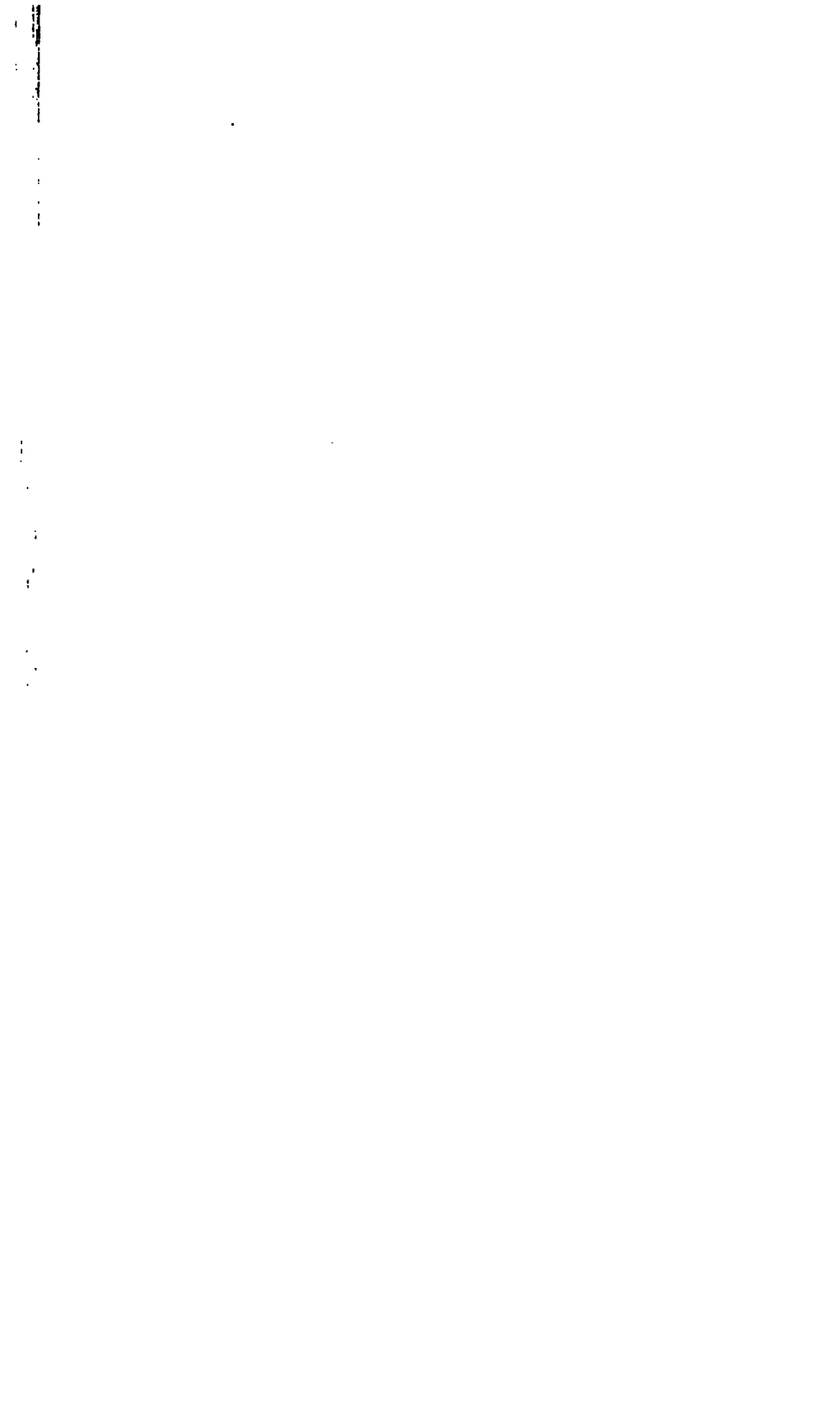
| Locality. | Quadrangle. | Island or county. | Elevation. |
|--|-------------|-------------------|----------------------|
| Waialeale; bronze tablet on highest point of island. | Kapaa..... | Kauai..... | <i>Fet.</i> 5,080 |
| Waikoeke triangulation station, on pali about 1,200 feet west of Pacific Sugar Co.'s mill, in concrete pier marking station; bronze tablet stamped "400 V. A." (vertical angle b. m.). | Waipio..... | Hawaii..... | 400 |
| Waihunahuna..... | Kapaa..... | Kauai..... | 412 |
| Waipio triangulation station, on high bluff on west side of Waipio Canyon, 2,500 feet above trail, in rock marking station; bronze tablet stamped "1399 V. A." (vertical angle b. m.). | Waipio..... | Hawaii..... | 1,399 |
| Waipuni..... | Kapaa..... | Kauai..... | 427 |
| Wekiu..... | do..... | do..... | 3,255 |

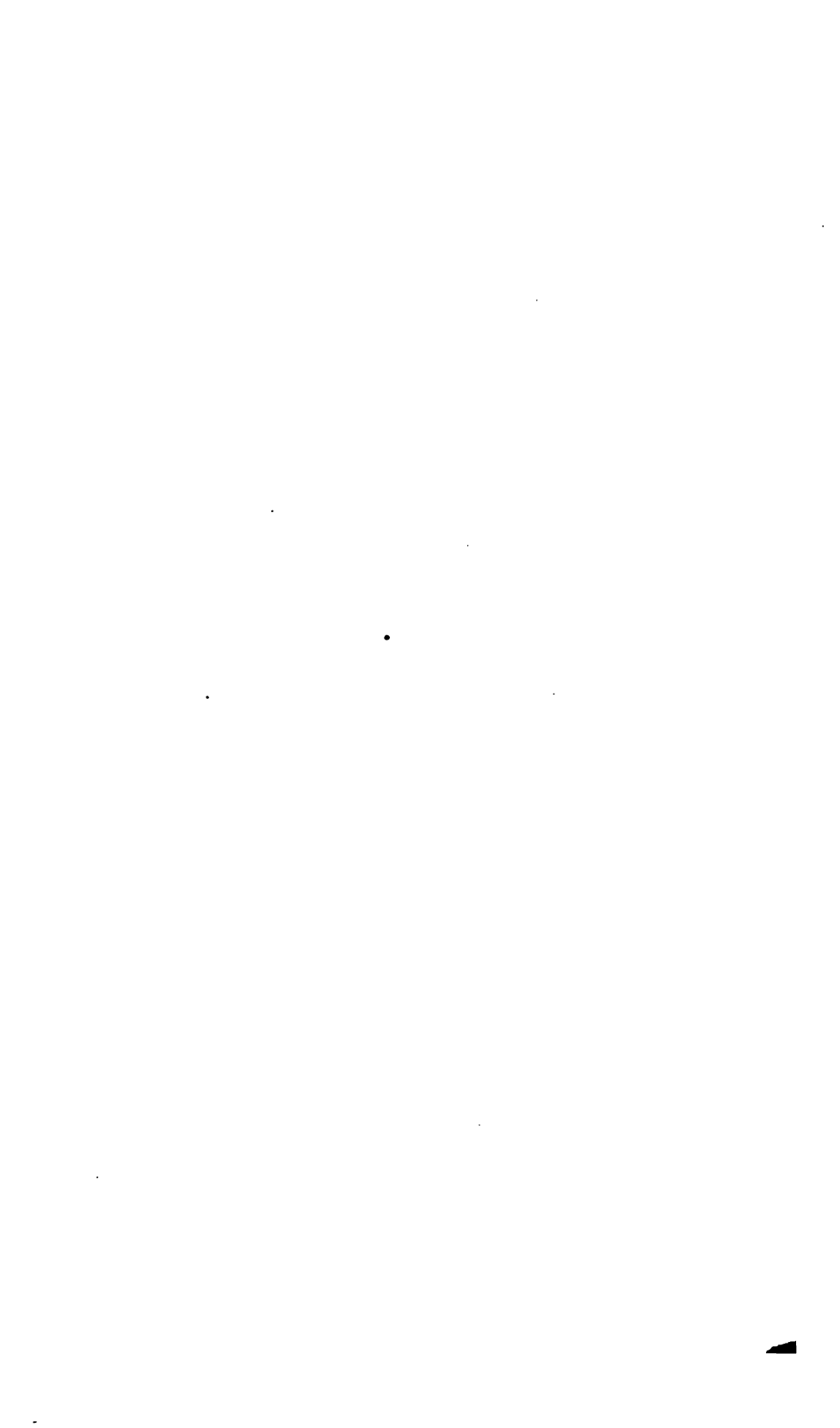
INDEX.

| A. | Page. | K. | Page. |
|---|----------------|--|----------------|
| Ahuaoa Homesteads..... | 9 | Kaiwili..... | 11 |
| Akaka Falls..... | 12 | Kalepa triangulation station..... | 28 |
| Alalaa..... | 12 | Kalopa..... | 8, 9 |
| Anahola..... | 26, 27 | Kamuela..... | 14, 17, 18, 19 |
| | | Kapaa..... | 26 |
| B. | | Kapaa quadrangle..... | 25-29 |
| Barringer, W. H., work of..... | 7, 20 | Kapala..... | 29, 31 |
| Bench marks, forms of..... | 5-6 | Kauai County..... | 25-36 |
| Biggs, L. F., work of..... | 25 | Kawahae..... | 13, 14, 15, 18 |
| Birdseye, S. H., work of..... | 7, 20 | Keaa..... | 21 |
| | | Kealia..... | 26, 27, 28 |
| C. | | Keanakakoi Crater..... | 22 |
| Camp Eight..... | 36 | Keekia..... | 8 |
| Camp Nine..... | 32, 36 | Kekaha..... | 31, 32, 35, 36 |
| Chin Chuck camp..... | 11, 12 | Kilauea Crater quadrangle..... | 22-23 |
| Cone Flag..... | 23 | Kilohana Crater..... | 28, 30 |
| Cooperation by Territory of Hawaii..... | 5 | Kilohana Crater triangulation station..... | 30 |
| Crater Hotel..... | 22, 24 | Kohala..... | 13, 14, 15, 16 |
| | | Kohala quadrangle..... | 13-16 |
| D. | | Koloa..... | 31 |
| Datum, determination of..... | 6 | Koolau..... | 26, 27 |
| Davis, G. R., work of..... | 5 | Kukaula..... | 8 |
| Devils Throat..... | 23, 24, 25 | Kukuihaele..... | 17, 18, 19 |
| Douglas, E. M., work of..... | 5 | | |
| | | L. | |
| E. | | Laupahoehoe..... | 7, 8, 11 |
| Eleele..... | 33, 34, 35 | Lawai..... | 30, 34 |
| | | Lihue..... | 29, 30 |
| | | Lihue quadrangle..... | 29-31 |
| | | | |
| G. | | M. | |
| Gannett, S. S., work of..... | 5 | Mahnukona..... | 13 |
| Gerdine, T. G., work of..... | 5 | Makapala..... | 16, 19 |
| Glenwood..... | 23, 24 | Makawili..... | 35 |
| | | Mana..... | 31, 32 |
| H. | | Maulua Gulch..... | 10, 11 |
| Haku triangulation station..... | 12 | Mountain View..... | 21, 23 |
| Hakalau..... | 10, 11, 12 | | |
| Halemaumau Crater..... | 22 | N. | |
| Hamakua quadrangle..... | 7-9 | Na Pali quadrangle..... | 31-33 |
| Hanalei..... | 27, 28, 31 | Nawiliwili..... | 30 |
| Hanamaulu..... | 25, 30, 31 | | |
| Hanapepe..... | 35 | O. | |
| Hawaii County..... | 7-25 | Ookala..... | 8 |
| Hawaii R. R. Co..... | 7 | | |
| Hilo..... | 10, 20, 21, 22 | P. | |
| Hilo quadrangle..... | 20-22 | Paaulo..... | 8 |
| Hokuula triangulation station..... | 19 | Papaaloa..... | 11 |
| Holoholoku triangulation station..... | 19 | Papaikou..... | 10, 11 |
| Homestead..... | 29, 34 | Pepeskee..... | 10, 12 |
| Honohina..... | 10 | Pohakapuka..... | 10, 12 |
| Honohina triangulation station..... | 12 | Pololu Gulch..... | 19 |
| Honokaa..... | 9, 16, 17 | Puaki camp..... | 11 |
| Honokane Nui Gulch..... | 19 | Puna quadrangle..... | 23-26 |
| Honomu..... | 10, 12 | Puu Huluhulu triangulation station..... | 25 |
| Honomu quadrangle..... | 10-12 | Puu Ka Pele..... | 32, 33 |

| | Page. | V. | Page. |
|--|--------|----------------------------|----------------|
| Puu Ka Pele triangulation station..... | 32, 33 | Volcano House..... | 22, 23 |
| Puu Lanl..... | 35 | | |
| Puu Lanl triangulation station..... | 35 | W. | |
| Puu Ohai triangulation station..... | 12 | Waa Waa camp..... | 12 |
| Puu Ohale triangulation station..... | 23 | Wahiawa..... | 34 |
| Puu O Nale triangulation station..... | 16 | Waiki quadrangle..... | 19 |
| | | Waimanu Valley..... | 19 |
| R. | | Waimaa, Hawaii County..... | 14, 17, 18, 19 |
| Rawis, J. M., work of..... | 20 | Waimaa, Kauai County..... | 35, 36 |
| | | Waimaa quadrangle..... | 33-36 |
| S. | | Wainaku Manka camp..... | 11, 22 |
| Secondary elevations..... | 37-40 | Wainiha..... | 31 |
| | | Waipio quadrangle..... | 16 |
| T. | | Waipio Valley..... | 19 |
| Twin Craters..... | 24 | | |









DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

BULLETIN 562

RESULTS OF SPIRIT LEVELING
IN VIRGINIA

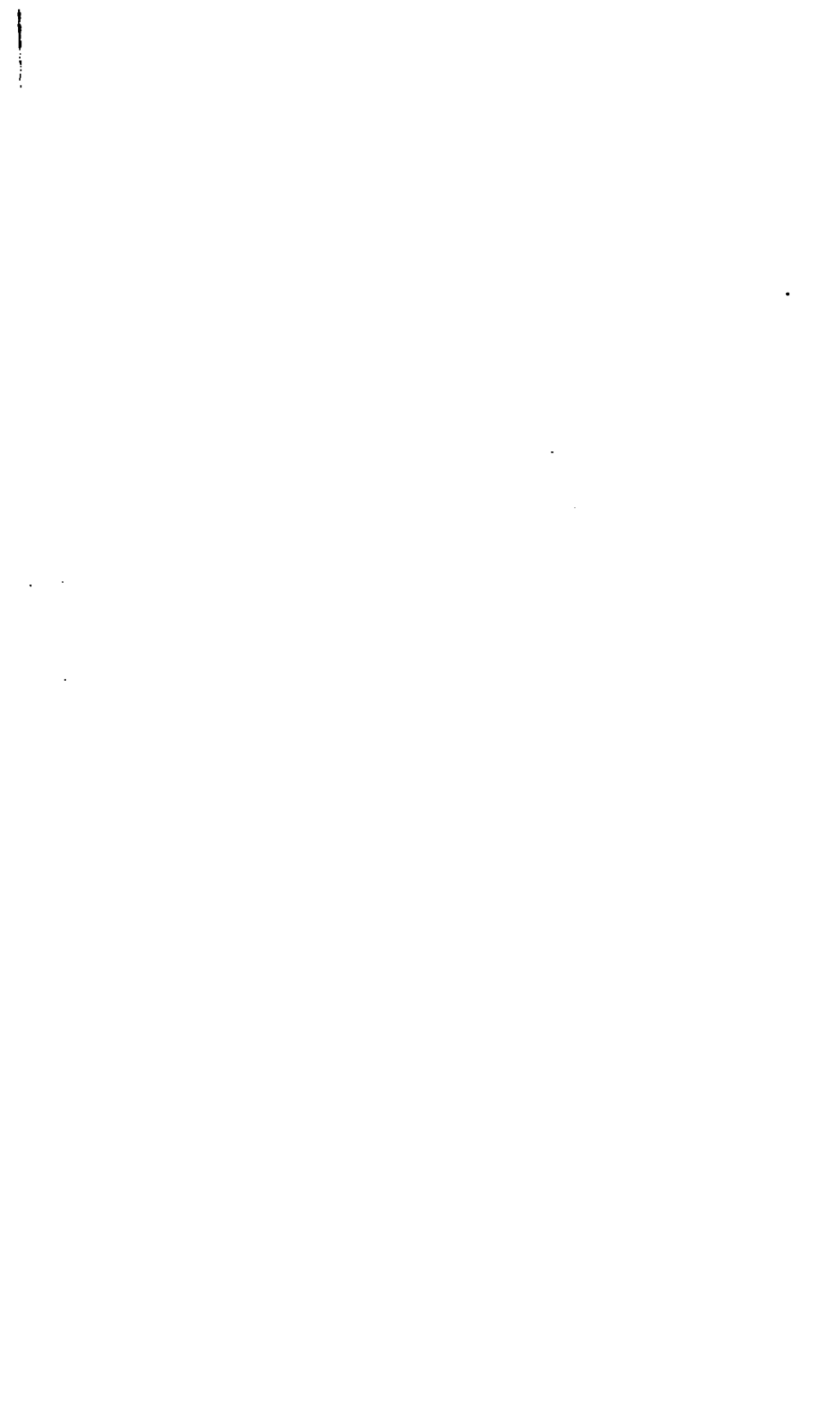
1900 TO 1913, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER

Part of work since 1907 done in cooperation with State of Virginia
through Virginia Geological Survey
T. L. Watson, State Geologist



WASHINGTON
GOVERNMENT PRINTING OFFICE
1914



CONTENTS.

| | Page. |
|---|-------|
| Introduction..... | 5 |
| Cooperation..... | 5 |
| Previous publication..... | 5 |
| Personnel..... | 5 |
| Classification..... | 5 |
| Bench marks..... | 6 |
| Datum..... | 6 |
| Topographic maps..... | 7 |
| Precise leveling..... | 8 |
| Bonsacks, Cahas Mountain, Callaghan, Clarksville, Clifton Forge, Eagle Rock, Martinsville, Natural Bridge, and Rocky Mount quadrangles (Alleghany, Botetourt, Franklin, Henry, Mecklenburg, and Roanoke counties)..... | 8 |
| Bramwell and Peterstown quadrangles (Giles and Tazewell counties).... | 13 |
| Primary leveling..... | 14 |
| Hallwood and Snow Hill quadrangles (Accomac County)..... | 14 |
| Hampton, Isle of Wight, Surry, Toano, Williamsburg, and Yorktown quadrangles (Gloucester, Isle of Wight, James City, Surry, Warwick, and York counties)..... | 14 |
| Fairfax, Haymarket, Indian Head, Seneca, and Washington quadrangles (Fairfax, Loudoun, and Prince William counties)..... | 17 |
| Boynton, Brookneal, Cahas Mountain, Callands, Chatham, Clarksville, Clover, Lynchburg, Moneta, Nathalie, and Virgilina quadrangles (Campbell, Charlotte, Halifax, Mecklenburg, and Pittsylvania counties)..... | 25 |
| Bonsacks, Craigs Creek, Eagle Rock, and Natural Bridge quadrangles (Botetourt, Craig, and Rockbridge counties)..... | 31 |
| Antietam quadrangle (Loudoun County)..... | 35 |
| Bramwell quadrangle (Tazewell County)..... | 36 |
| Middlesboro quadrangle (Lee County)..... | 37 |
| Abingdon quadrangle, embracing Damascus, Glade Springs, Marion, and Mount Rogers 15' quadrangles (Grayson, Russell, Smyth, and Washington counties)..... | 38 |
| Big Stone Gap, Bramwell, Bucu, Burkes Garden, Clintwood, Coeburn, Glade Springs, Hagan, Hansonville, Middlesboro, Nolansburg, Pound, Pounding Mill, Regina, Richlands, Sneedville, and Wise quadrangles (Dickenson, Lee, Russell, Tazewell, and Wise counties)..... | 41 |
| Peterstown quadrangle (Giles County)..... | 56 |
| Appendix A: Elevations adjusted by the Coast and Geodetic Survey from precise leveling..... | 58 |
| Appendix B: Secondary elevations..... | 62 |
| Index..... | 65 |

ILLUSTRATION.

| | Page. |
|---|-------|
| PLATE I. Geological Survey bench marks..... | 5 |





GEOLOGICAL SURVEY STATION MARKS.

- A.*, Tablet used in cooperating States. The State name is inserted at *G*.
B and *D*, Copper temporary bench mark, consisting of a nail and copper washer.
A, *C*, and *E*, Tablets for stone or concrete structures.
F, Iron post used where there is no rock.

RESULTS OF SPIRIT LEVELING IN VIRGINIA, 1900 TO 1913, INCLUSIVE.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Cooperation.—The State of Virginia contributed financially, through the Virginia Geological Survey, Thomas L. Watson, State Geologist, to part of the work done since 1907.

Previous publication.—That portion of the results of spirit leveling in Virginia previously published in Bulletin 434, containing descriptions and elevations of bench marks established in Delaware, District of Columbia, Maryland, and Virginia from 1896 to 1909, inclusive, and based on the 1903 adjustment, has been corrected to agree with the 1907 adjustment of precise leveling of the Coast and Geodetic Survey, and is here republished, together with the results of spirit leveling by the United States Geological Survey in Virginia since 1909. The elevations by the 1907 adjustment were not changed by the 1912 adjustment and are not likely to be changed by any future adjustment of the level net.

Personnel.—The field work from 1900 to 1906, inclusive, was done under the direction of H. M. Wilson, geographer, and that from 1907 to 1911, inclusive, was done under Frank Sutton, geographer. The work since January, 1908, was done under the general direction of R. B. Marshall, chief geographer. Credit is given in the headings of the several lists to the respective levelmen. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, under the general direction of E. M. Douglas, geographer.

Classification.—The elevations are classified as precise or primary, according to the methods employed in their determination. The former are determined by lines of levels run either in both forward and backward directions or by simultaneous double-rodged lines, a high-grade instrument being used and special precautions being taken in

observations and reduction to correct errors and make the line continuously good throughout. The latter or primary levels are determined with the Y level, precautions being taken against only the principal errors and the levels being run mostly in circuits of single lines. The allowable limit of error observed on the precise work already done by the Geological Survey in this State is represented in feet by $0.03\sqrt{D}$ and that for the primary work by $0.05\sqrt{D}$, in which D is the length of circuit in miles.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (*C* and *E*, Pl. I), $3\frac{1}{2}$ inches in diameter and $\frac{1}{4}$ inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (*F*, Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post $3\frac{1}{2}$ inches in outer diameter and 4 feet in length. It is split at the bottom and spread out to a width of 10 inches in order to give a firm bearing on the earth, and is set about 3 feet in the ground. A bronze or aluminum-bronze cap is riveted upon the top of the post. A third style of bench mark with abbreviated lettering (*B* and *D*, Pl. I), is used for unimportant points. This consists of a special copper nail $1\frac{1}{2}$ inches in length driven through a copper washer $\frac{3}{4}$ inch in diameter. The tablets as well as the caps on the iron posts are appropriately lettered, and cooperation by States is indicated by the addition of the State name (*G*, Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot as determined by the levelman. These numbers are stamped with $\frac{3}{16}$ -inch steel dies on the tablets of post caps, to the left of the word "Feet." The office adjustment of the notes and the reduction to mean sea level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey, at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of winds and tides were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. Mean sea level is the average height of the water, all stages of the tide being considered. It is determined from observations made by

means of tidal gages placed at stations where local conditions, such as long, narrow bays, rivers, and like features, will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea levels determined from observations in the Atlantic Ocean, the Gulf of Mexico, and the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "Datum" on tablets or posts. For such areas corrections for published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

Topographic maps.—Maps of the following quadrangles wholly or partly in Virginia have been published by the United States Geological Survey up to September 1, 1914. They may be obtained for 10 cents each or \$3 for 50, except as otherwise noted, on application to the Director of the Survey at Washington, D. C.

Abingdon (Va.-Tenn.-N. C.).

Amelia.

Antietam (Md.-Va.-W. Va.).¹

Appomattox.

Bermuda Hundred.

Beverly (W. Va.-Va.).

Bristol (Va.-Tenn.).

Buckingham.

Christiansburg (Va.-W.-Va.).

Crisfield (Md.-Va.).

Cumberland Gap (Ky.-Va.-Tenn.).

Dublin (Va.-W. Va.).

Estillville (Va.-Tenn.-Ky.).

Farmville.

Franklin (W. Va.-Va.).

*Frederick (Md.-Va.).²

Fredericksburg (Va.-Md.).

Goochland.

Gordonsville.

Green Run (Md.-Va.).

Grundy (Va.-Ky.).

Hampton.

Harpers Ferry (Va.-W. Va.-Md.).¹

Harrisonburg.

Hillsville (Va.-N. C.).

Jonesville (Ky.-Va.-Tenn.).

Lewisburg (Va.-W. Va.).

Lexington.

Luray.

Lynchburg.

Monterey (Va.-W. Va.).

Montross (Va.-Md.).³

Mount Vernon (Va.-Md.-D. C.).⁴

Natural Bridge.⁵

Natural Bridge special.⁵

Nomini (Md.-Va.).³

*Norfolk (Va.-N. C.).⁶

Norfolk (Va.-N. C.), double sheet, 20 cts.⁶

Norfolk special.

Oceana (W. Va.-Va.-Ky.).

Palmyra.

Petersburg.

Piney Point (Md.-Va.).³

Pocahontas (Va.-W. Va.).

* Out of print.

¹ Antietam sheet shows part of Harpers Ferry quadrangle on larger scale.

² Rockville and Seneca sheets show parts of Frederick quadrangle on larger scale.

³ Montross, Piney Point, and Wicomico sheets, on scale of 1:62,500, have been reduced and form parts of Nomini sheet, on scale of 1:125,000.

⁴ The west half of Washington sheet shows part of Mount Vernon quadrangle on larger scale.

⁵ Natural Bridge special sheet shows part of Natural Bridge quadrangle on larger scale.

⁶ Norfolk double sheet includes Norfolk and Virginia Beach sheets.

Point Lookout (Md.-Va.).¹

Princess Anne (Md.-Va.).

Richmond.

Roanoke.

Rockville (Md.-Va.).²

Romney (W. Va.-Va.-Md.).

St. Marys (Md.-Va.).¹Seneca (Md.-Va.).²

Snow Hill (Md.-Va.).

Spotsylvania.

Staunton (Va.-W. Va.).

Tazewell (Va.-W. Va.).

Virginia Beach (Va.- N. C.).³

Warfield (W. Va.-Ky.-Va.).

Warrenton.

Washington (Md.-D. C.-Va.), double sheet, 20 cents.^{4 5 6}*West Washington (Md.-D. C.-Va.).^{4 6}

Whitesburg (Ky.-Va.).

Wicomico (Md.-Va.).⁷Williamsburg.⁸

Winchester (Va.-W. Va.).

Woodstock (Va.-W. Va.).

Wytheville (Va.-N. C.).

Yorktown.⁸

PRECISE LEVELING.

Bonsacks, Cahas Mountain, Callaghan, Clarksville, Clifton Forge, Eagle Rock, Martinsville, Natural Bridge, and Rocky Mount quadrangles.

ALLEGHANY, BOTETOURT, FRANKLIN, HENRY, MECKLENBURG, AND ROANOKE COUNTIES.

The following list embodies the Virginia portion of the results of two lines of precise levels. The first line, a spur from Durham, N. C., to Clarksville, Va., was run in 1905 by R. L. Libbey. The second line, from Greensboro, N. C., to Lock No. 6, near Charleston, W. Va., was run in three sections: (1) From Greensboro, N. C., to Buchanan, Va., along the Norfolk & Western Ry., in 1905, by R. L. Libbey; (2) from Buchanan to Moss Run, along the Chesapeake & Ohio Ry., in 1906, by N. A. Campbell; and (3) from Moss Run to Lock No. 6, along the Chesapeake & Ohio and the Kanawha & Michigan railways, in 1907, by C. H. Sempser.

The closure error of the second line upon the United States Army Engineer Corps elevation at Lock No. 6, corrected to accord with the 1903 adjustment, was 0.732 foot high; but this error has been removed by adjustment over a total distance of 365 miles.

CLARKSVILLE QUADRANGLE.

[Latitude 36° 30'–36° 45'; longitude 78° 30'–78° 45']

From Soudan north to Clarksville.

| | |
|--|-------------------|
| Soudan, 125 feet west of south switch of siding, in southeast corner of W. L. Averett's yard; iron post stamped "312" (b. m. U)..... | Feet. 311. 964 |
| Clarksville, 2.5 miles south of, 60 feet west of Southern Ry. tracks, at edge of woods, directly opposite milepost 34; iron post stamped "326" (b. m. V) | 325. 799 |

* Out of print.

¹ Point Lookout sheet shows part of St. Marys quadrangle on larger scale.

² Rockville and Seneca sheets show parts of Frederick quadrangle on larger scale.

³ Norfolk double sheet includes Norfolk and Virginia Beach sheets.

⁴ The west half of Washington sheet shows part of Mount Vernon quadrangle on larger scale.

⁵ Washington sheet shows the same area as East Washington and West Washington sheets.

⁶ The east half of Washington sheet, on scale of 1:62,500, has been reduced and forms part of Patuxent sheet, on scale of 1:125,000.

⁷ Montross, Piney Point, and Wicomico sheets, on scale of 1:62,500, have been reduced and form parts of Nomini sheet, on scale of 1:125,000.

⁸ Shows wooded areas.

| | |
|---|-------------------|
| Clarksville, 25 feet south of lower station, 5 feet above track, in face of rock cut; aluminum tablet stamped "286" (b. m. W)..... | Feet. 284. 071 |
| Clarksville, on south side of Main Street, between sidewalk and gutter, 125 feet west of tracks; iron post stamped "284" (b. m. X)..... | 285. 886 |
| Clarksville, in southeast corner of west abutment pier of Southern Ry. bridge; aluminum tablet stamped "288" (b. m. Y)..... | 287. 568 |

MARTINSVILLE QUADRANGLE.

[Latitude 36° 27'-36° 45'; longitude 79° 45'-36°.]

From Price, N. C., north along Norfolk & Western Ry. to Bassett.¹

| | |
|---|----------|
| Ridgeway, in front of station; top of rail..... | 840. 8 |
| Ridgeway, 175 feet northeast of station; 85 feet east of railroad track, 30 feet east of county road, nearly opposite road-crossing sign; iron post stamped "834"..... | 833. 774 |
| Ridgeway, 3.5 miles north of, 200 feet northwest of milepost 54, 600 feet south of mail crane, 50 feet west of railroad track; iron post stamped "720"..... | 719. 867 |
| Martinsville, in front of station; top of rail..... | 954. 2 |
| Martinsville, 350 feet northwest of station, 300 feet north of railroad track, 10 feet east of College Street, in southwest corner of S. P. Pedigo's yard; iron post stamped "947"..... | 947. 268 |
| Martinsville, 2.5 miles northwest of, 60 feet west of Martinsville-Bassett wagon road, 40 feet north of railroad track, 600 feet northwest of milepost 62; iron post stamped "773"..... | 772. 742 |
| Martinsville, 5.5 miles north of, 600 feet north of milepost 64, in south abutment of concrete railway culvert 1,870; aluminum tablet stamped "729"..... | 729. 360 |
| Bassett, 3.5 miles south of, 200 feet south of milepost 66, in west side of first stone culvert south of milepost 66; square cut..... | 737. 061 |

ROCKY MOUNT QUADRANGLE.

[Latitude 36° 45'-37°; longitude 79° 45'-30°.]

From Bassett along Norfolk & Western Ry. to Rocky Mount.

| | |
|---|-------------|
| Bassett, in front of station; top of rail..... | 758. 6 |
| Bassett, near southeast corner of yard of Jasper Bassett, outside of front fence, 10 feet west of wagon road, 75 feet southwest of road crossing, nearly opposite Bassett furniture factory; iron post stamped "762"..... | 761. 566 |
| Town Creek, 200 feet northeast of Philpotts's store, 200 feet southeast of milepost 73, southeast of railroad; iron post stamped "798"..... | 797. 387 |
| Town Creek, 0.25 mile north of, 120 feet northwest of railway crossing, in top of southeast wing wall of railway bridge 1860; aluminum tablet stamped "803"..... | 803. 198 |
| Henry, 0.5 mile south of, in top of northwest wing wall of concrete railway bridge 1857; aluminum tablet stamped "882"..... | 882. 180 |
| Henry, in front of station; top of rail..... | 891. 0 |
| Henry, 0.5 mile north of, near end of first curve north of station, 25 feet west of tracks, 200 feet west of river; iron post stamped "905"..... | 904. 681 |
| Henry, 3 miles north of, in northwest wing wall of concrete railway bridge 1849, about 500 feet southwest of milepost 81; aluminum tablet stamped "1089"..... | 1, 088. 913 |
| Ferrum, 200 feet north of H. E. Menifee's store, 100 feet west of railroad tracks, in vacant lot owned by H. E. Menifee, 2 feet west of fence and roadway; iron post stamped "1296"..... | 1, 296. 329 |

¹ For part of this line in North Carolina see Bulletin 434.

| | Feet. |
|---|-------------|
| Ferrum, in front of station; top of rail..... | 1, 298. 1 |
| Ferrum, 2 miles north of, in first masonry culvert north of station, 300 feet northeast of milepost 86; square cut..... | 1, 196. 334 |
| Wadsboro, 40 feet west of railway tracks, 10 feet north of public road, opposite south switch signal; iron post stamped "1264"..... | 1, 263. 865 |
| Saunders siding, 60 feet east of railway track, opposite sign "Water 1 mile," 100 feet northeast of switch, opposite rear of Saunders's store; iron post stamped "1084"..... | 1, 084. 137 |
| Rocky Mount, midway between the Norfolk & Western and Southern railways, near crossing, 500 feet southwest of milepost 94, 200 feet southwest of Norfolk & Western station; iron post stamped "1146"..... | 1, 145. 377 |
| Rocky Mount, in front of station; top of rail..... | 1, 146. 4 |

CAHAS MOUNTAIN QUADRANGLE.

[Latitude 37°-37° 15'; longitude 79° 45'-80°.]

From Rocky Mount along Norfolk & Western Ry. to point 4 miles south of Roanoke.

| | |
|--|-------------|
| Rocky Mount, 1.8 miles east of, in southeast wing wall of concrete railway culvert 1828, about 700 feet northeast of sign "1 mile to station;" aluminum tablet stamped "1106"..... | 1, 106. 274 |
| Wirtz, 1.5 miles south of, 400 feet north of railroad-crossing sign, 20 feet east of track, in first concrete culvert south of milepost 99; aluminum tablet stamped "1067"..... | 1, 066. 861 |
| Wirtz, 600 feet south of station, 50 feet east of railway, 90 feet southeast of A. J. McNeil's store, 10 feet south of wagon road; iron post stamped "1128"..... | 1, 127. 878 |
| Wirtz, in front of station; top of rail..... | 1, 121. 3 |
| Boones Mills, 3 miles south of, 700 feet northwest of milepost 103, 503 feet southwest of road, in northwest abutment of trestle 1819; aluminum tablet stamped "1131"..... | 1, 130. 415 |
| Boones Mills, 60 feet northeast of station; 40 feet south of wagon road, opposite store of C. W. Mills & Co.; iron post stamped "1128"..... | 1, 127. 915 |
| NOTE.—Post was moved S. 48° E. 36.75 feet Nov. 11, 1912; elevation not changed. | |
| Wright, 1 mile south of, 500 feet north of milepost 111, in west side of stone culvert; aluminum tablet stamped "1171"..... | 1, 170. 567 |
| Wright, 800 feet south of station, 500 feet south of milepost 110, 20 feet east of track; iron post stamped "1108"..... | 1, 107. 700 |
| Starkey, 500 feet north of station, in east side of stone culvert, opposite water tank; square cut..... | 1, 138. 579 |
| Starkey, in front of station; top of rail..... | 1, 138. 7 |
| Roanoke, 4 miles south of, 600 feet south of milepost 117, east side of stone culvert; aluminum tablet stamped "1086"..... | 1, 085. 956 |

BONSACKS QUADRANGLE.

[Latitude 37° 15'-37° 30'; longitude 79° 45'-80°.]

From point 4 miles south of Roanoke along Norfolk & Western Ry. to Lithia.

| | |
|--|----------|
| Roanoke, 1.5 miles south of, in southwest abutment of railway bridge over Roanoke River; aluminum tablet stamped "937"..... | 936. 680 |
| Roanoke, in southwest corner of Hotel Roanoke grounds, near Shenandoah Avenue and Jefferson Street gate, 80 feet north of Jefferson Street railroad crossing; iron post stamped "924"..... | 923. 329 |

| | |
|---|-------------------|
| Roanoke, in south abutment of First Street viaduct, 270 feet west of Salem Avenue, facing railroad tracks; aluminum tablet stamped "925"..... | Feet. 925. 046 |
| Roanoke, in front of station; top of rail..... | 919. 7 |
| Hollins, 50 feet east of track, 40 feet southeast of station, near northwest corner of S. V. Nininger's yard; iron post stamped "1169"..... | 1, 168. 954 |
| Hollins, in front of station; top of rail..... | 1, 165. 3 |
| Cloverdale, in southwest corner of fenced right of way, back of section tool house, 100 feet northwest of station, 10 feet north of wagon road; iron post stamped "1133"..... | 1, 132. 435 |
| Troutville, 2 miles south of, 500 feet north of milepost 9, in northwest stone abutment of plate-girder bridge; aluminum tablet stamped "1266".... | 1, 265. 411 |
| Troutville, in railroad right of way, opposite and 50 feet west of station, 6 feet west of telegraph pole; iron post stamped "1405"..... | 1, 404. 598 |
| Troutville, 270 feet north of station, 60 feet north of south switch, in west side of first stone culvert north of station; aluminum tablet stamped "1414"..... | 1, 413. 973 |
| Troutville, in front of station; top of rail..... | 1, 407. 7 |
| Nace, 100 feet west of station, on railroad right of way, 75 feet southwest of road crossing, 20 feet south of wagon road; iron post stamped "1356".... | 1, 356. 034 |
| Nace, 2 miles north of, in southwest wing wall of iron railway bridge 411 over Back Creek; aluminum tablet stamped "1170"..... | 1, 169. 900 |
| Lithia, in front of station; top of rail..... | 982. 0 |
| Lithia, 90 feet west of railway tracks, opposite station, 10 feet south of east of J. W. Shirley's store, near fence corner; iron post stamped "978"..... | 978. 058 |

NATURAL BRIDGE QUADRANGLE.

[Latitude 37° 30'–37° 45'; longitude 79° 30'–79° 45'.]

From point 3 miles south of Buchanan north along Norfolk & Western Ry. to Buchanan, thence northwest along Chesapeake & Ohio Ry. to Saltpetre Cave.

| | |
|--|----------|
| Buchanan, 3 miles south of, 1,000 feet north of milepost 22, near cattleguard, in east side of stone culvert; aluminum tablet stamped "876"..... | 875. 355 |
| Buchanan, in front of Norfolk & Western Ry. station; top of rail..... | 883. 3 |
| Buchanan, on High Street, near southeast corner of Presbyterian Church; iron post stamped "862"..... | 861. 394 |
| Buchanan, in northwest abutment of wagon bridge near Chesapeake & Ohio Ry. passenger station; aluminum tablet stamped "832"..... | 831. 854 |
| Buchanan, in front of Chesapeake & Ohio Ry. station; top of rail..... | 829. 8 |
| Buchanan, 3.5 miles west of, at telegraph station; top of rail..... | 849. 2 |
| Springwood, on northwest abutment of wagon bridge over James River; aluminum tablet stamped "856"..... | 855. 628 |
| Springwood, in front of station; top of rail..... | 851. 8 |
| Springwood, 2.3 miles west of, northwest abutment of railroad bridge; aluminum tablet stamped "887"..... | 887. 550 |
| Saltpetre Cave, in front of station; top of rail..... | 895. 8 |
| Saltpetre Cave, in southeast corner of east abutment at south side of railroad trestle over stream, 100 feet west of station; aluminum tablet stamped "895"..... | 894. 888 |

EAGLE ROCK QUADRANGLE.

[Latitude 37° 30'-37° 45'; longitude 79° 45'-80°.]

From Springwood along Chesapeake & Ohio Ry. to Glen Wilton.

| | Feet. |
|--|---------|
| Burketons, in front of telegraph station; top of rail..... | 900.6 |
| Salisbury, in front of station; top of rail..... | 915.4 |
| Salisbury, on northeast abutment of railroad bridge; aluminum tablet stamped "913"..... | 912.589 |
| Eagle Rock, in front of station; top of rail..... | 932.0 |
| Eagle Rock, 0.2 mile west of, on northwest abutment of wagon bridge; aluminum tablet stamped "934"..... | 934.550 |
| Eagle Rock, 0.6 mile west of, road crossing; top of rail..... | 936.1 |
| Eagle Rock, 1.8 miles west of, road crossing; top of rail..... | 939.0 |
| Gala, northwest abutment of railroad bridge; aluminum tablet stamped "954"..... | 954.414 |
| Gala, in front of station; top of rail..... | 955.6 |
| Gala, 1.9 miles west of, on east side of track, 60 feet southeast of switch; iron post stamped "956"..... | 955.872 |
| Haden, in front of station; top of rail..... | 962.3 |
| Haden, 1.4 miles west of, southeast abutment of railroad bridge; aluminum tablet stamped "986"..... | 985.930 |
| Baldwin, in front of station; top of rail..... | 987.1 |
| Baldwin, 0.5 mile west of; road crossing..... | 983.6 |
| Baldwin, 2.2 miles west of, road crossing; top of rail..... | 991.6 |
| Glen Wilton, in front of station; top of rail..... | 999.4 |
| Glen Wilton, 70 feet from northwest end of station, west of private road, 4 feet from fence corner; iron post stamped "997"..... | 996.251 |

CLIFTON FORGE QUADRANGLE.

[Latitude 37° 45'-38°; longitude 79° 45'-80°.]

From Lick Run along Chesapeake & Ohio Ry. to Covington.

| | |
|--|-----------|
| Lick Run, in front of station; top of rail..... | 1,003.8 |
| Lick Run, 0.6 mile west of, rock cut; aluminum tablet stamped "1017"..... | 1,016.584 |
| Lick Run, 1.1 miles west of, road crossing; top of rail..... | 1,026.3 |
| Lick Run, 1.5 miles west of, Alleghany-Botetourt county line; top of rail..... | 1,025.54 |
| Iron Gate, in front of station; top of rail..... | 1,028.7 |
| Iron Gate, 0.3 mile west of, road crossing; top of rail..... | 1,030.9 |
| Clifton Forge, on railroad bridge abutment, east of station; aluminum tablet stamped "1064"..... | 1,063.419 |
| Clifton Forge, in front of station; top of rail..... | 1,065.7 |
| Clifton Forge, 3.3 miles west of, road crossing; top of rail..... | 1,127.2 |
| Clifton Forge, 3.3 miles west of, culvert; aluminum tablet stamped "1127"..... | 1,126.680 |
| Lowmoor, in front of station; top of rail..... | 1,145.8 |
| Lowmoor, 2.9 miles west of, south of track, in rock ledge; aluminum tablet stamped "1198"..... | 1,197.163 |
| Lowmoor, 5.1 miles west of, in east abutment of railroad bridge over river; aluminum tablet stamped "1198"..... | 1,197.547 |
| Mallow, in front of station; top of rail..... | 1,216.2 |
| Mallow, 2.1 miles west of, road crossing; top of rail..... | 1,263.6 |
| Mallow, 3 miles west of, road crossing; top of rail..... | 1,246.5 |
| Covington, in front of station; top of rail..... | 1,252.5 |
| Covington, 0.4 mile west of; road crossing..... | 1,255.2 |
| Covington, 0.6 mile west of, in abutment of iron railroad bridge over river; aluminum tablet stamped "1255"..... | 1,255.074 |

CALLAGHAN QUADRANGLE.

[Latitude 37° 45'–38°; longitude 80°–80° 15'.]

From Covington along Chesapeake & Ohio Ry. to Alleghany.¹

| | Feet. |
|--|-------------|
| Covington, 2.8 miles west of, on northwest abutment of railroad bridge over river; aluminum tablet stamped "1304"..... | 1, 303. 896 |
| Covington, 4.8 miles west of, in bridge abutment; aluminum tablet stamped "1379"..... | 1, 378. 768 |
| Callaghan, in front of station; top of rail..... | 1, 425. 9 |
| Moss Run, in front of station; top of rail..... | 1, 575. 2 |
| Moss Run, 0.9 mile west of, 396 feet west of milepost "Ft. M 299," south side of track, in face of wall in rock cut; aluminum tablet stamped "1599"..... | 1, 598. 815 |
| Backbone, in front of station; top of rail..... | 1, 729. 6 |
| Backbone, 380 feet west of, southeast foundation stone of water tank, north side of track; aluminum tablet stamped "1733"..... | 1, 733. 079 |
| Jerry's Run, in face of rock at rear of east end of station; aluminum tablet stamped "1910"..... | 1, 909. 246 |
| Jerry's Run, in front of station; top of rail..... | 1, 906. 1 |
| East Alleghany, in front of station; top of rail..... | 2, 039. 7 |
| Alleghany, 350 feet east of station, north face of east abutment of bridge under track; aluminum tablet stamped "2049"..... | 2, 047. 420 |
| Alleghany, in front of station; top of rail..... | 2, 070. 6 |

Bramwell and Peterstown quadrangles.

GILES AND TAZEWELL COUNTIES.

The following is the Virginia portion of the unadjusted results of a line of precise levels run from Hinton, W. Va., south along highway to Glenlyn, Va., thence west along Norfolk & Western Ry. to Graham, Va., based upon an elevation at Hinton, determined by precise leveling adjusted to agree with the 1912 adjustment. The leveling was done by two parties joining at a point 2 miles west of Oakvale. Yard rods and prism levels were used and the latest method was followed. The total length of double line is 57.8 miles and the total divergence was plus 0.155 foot. For elevations in the West Virginia portion of these quadrangles see Bulletin 477.

The leveling was done in 1909 in Peterstown quadrangle by C. H. Semper and in Bramwell quadrangle by T. A. Green.

PETERSTOWN QUADRANGLE.

[Latitude 37° 15'–37° 30'; longitude 80° 45'–81°.]

At Glenlyn.

| | Feet. |
|---|-------------|
| Glenlyn, opposite station, on east-bound track; top of rail..... | 1, 532. 1 |
| Glenlyn, 528 feet west of, on south side of Norfolk & Western Ry., 8 feet south of track, in top of railroad culvert; aluminum tablet stamped "1535"..... | 1, 535. 109 |

BRAMWELL QUADRANGLE.

[Latitude 37° 15'–37° 30'; longitude 81° 15'–81° 30'.]

At Graham.

| | |
|--|-------------|
| Graham, west side of front entrance to Bank of Graham, in third step above pavement; aluminum tablet stamped "2389"..... | 2, 389. 450 |
|--|-------------|

¹ For continuation of this line in West Virginia see Bulletin 390.

PRIMARY LEVELING.**Hallwood and Snow Hill quadrangles.****ACCOMAC COUNTY.**

The elevations in the following list, based on tidal observations made by the Coast and Geodetic Survey at Franklin City, form part of a net of levels carried from Baltimore. (See Maryland list, Bulletin 563.) The leveling was done in 1900 by J. W. Hodges.

HALLWOOD QUADRANGLE.

[Latitude $37^{\circ} 30' - 37^{\circ} 45'$; longitude $75^{\circ} 30' - 75^{\circ} 45'$.]

From Pocomoke City south to Massey.

| | |
|---|-----------------|
| Massey, at New Church station of the New York, Philadelphia, & Norfolk R. R.; iron post stamped "24 Balto"..... | Feet. 23.751 |
| NOTE.—Upper part of post was broken off accidentally in 1909. | |

SNOW HILL QUADRANGLE.

[Latitude $38^{\circ} - 38^{\circ} 15'$; longitude $75^{\circ} 15' - 75^{\circ} 30'$.]

At Franklin City.

| | |
|---|-------|
| Franklin City, in front of post-office building, in foundation wall; bronze tablet stamped "4 Balti"..... | 3.415 |
|---|-------|

Hampton, Isle of Wight, Surry, Toano, Williamsburg, and Yorktown quadrangles.

GLOUCESTER, ISLE OF WIGHT, JAMES CITY, SURRY, WARWICK, AND YORK COUNTIES.

The elevations in the following list are based on the latest adjusted heights along the Coast and Geodetic Survey precise-level line from Newport News. In crossing the James and York rivers, synchronous gage records were made for rising and falling tides.

The leveling in Toano, Williamsburg, Yorktown, and Surry quadrangles was done in 1904 by T. A. Green; in Hampton quadrangle in 1906 by R. S. Deemer.

TOANO QUADRANGLE.

[Latitude $37^{\circ} 15' - 37^{\circ} 30'$; longitude $76^{\circ} 45' - 77^{\circ}$.]

At Croaker.

| | |
|--|------------------|
| Croaker, 25 feet east of road forks, directly south of post office and store kept by K. K. Tyssen; iron post stamped "107 Adj 1903"..... | Feet. 107.360 |
|--|------------------|

WILLIAMSBURG QUADRANGLE.

[Latitude $37^{\circ} 15' - 37^{\circ} 30'$; longitude $76^{\circ} 30' - 76^{\circ} 45'$.]

From Williamsburg north along highway to Croaker, thence northeast, crossing York River to Signpine, thence southeast via Sassafras to Gloucester, thence south to Gloucester Point.

| | |
|--|--------|
| Williamsburg, in east side of post office, in fourth brick from northeast corner; aluminum tablet stamped "84 Adj 1903"..... | 84.524 |
| Williamsburg, 4.8 miles north of, at main road forks 1.3 miles west of Magruder post office, just south of road forks, on east side of road, at edge of Mr. Crest's farm; iron post stamped "82 Adj 1903"..... | 81.969 |

| | |
|---|------------------|
| Oaktree, 2.1 miles northwest of, junction with main road, 1.4 miles north-east of Lightfoot, east side of road, just south of forks, on edge of William Maboul's farm; iron post stamped "115 Adj 1903"..... | Feet. 115.034 |
| Croaker, 3.6 miles northeast of, south of York River, 0.2 mile north of mouth of Taskinas Creek, on ground of the Wilburg H. Davis estate, post is planted near southeast corner of kitchen of residence, on south side; iron post stamped "39 Adj 1903"..... | 38.602 |
| West End, north of York River, west of road, 300 feet west of small creek, on Captain Coleman's estate, 75 feet south of house occupied by Moses Roe; iron post stamped "3 Adj 1903"..... | 3.431 |
| Signpine, 1.1 miles south of crossroads, west of oak tree standing in road; iron post stamped "92 Adj 1903"..... | 92.272 |
| Sassafras post office, at southwest corner of crossroads, at northeast corner on north side B. C. Newcomb's store; iron post stamped "97 Adj 1903"..... | 97.174 |
| Gloucester, in fifth brick from northwest corner at west side of building owned and occupied by L. E. Mumford Banking Co., in tenth course of bricks above ground; aluminum tablet stamped "76 Adj 1903"..... | 76.155 |
| Whitemarsh post office, west of road, at junction with road running west, just north of forks, in southeast corner of J. R. Newcomb's store; iron post stamped "55 Adj 1903"..... | 54.966 |
| Ordinary post office, 1 mile south of west of road, near southeast corner of W. H. Hoggs's store; iron post stamped "39 Adj 1904"..... | 39.586 |

YORKTOWN QUADRANGLE.

[Latitude 37°-37° 15'; longitude 76° 30'-76° 45'.]

From Gloucester Point across York River to Yorktown, thence southeast to Lee Hall.

| | |
|--|--------|
| Gloucester Point post office, at south side, near southwest corner of store kept by J. A. Taliaferro; iron post stamped "5 Adj 1903"..... | 4.881 |
| Yorktown post office, 300 feet west of boat wharf, west of road, at corner of lot owned by R. W. Shields; iron post stamped "6 Adj 1903"..... | 6.442 |
| Halsteads Point, 1.1 miles south of, east side of Lebanon Church, in third brick from northeast corner, in tenth course of bricks above ground; aluminum tablet stamped "82 Adj 1903"..... | 81.845 |

From Williamsburg southeast along Chesapeake & Ohio Ry. to Denbigh.

| | |
|--|--------|
| Grove, on south side of post office, near southeast corner; iron post stamped "89 Adj 1903"..... | 89.157 |
| Lee Hall, 1.9 miles southeast of, pumping station at reservoir, on east side of pump house, in south end of large stone forming doorsill of front entrance; aluminum tablet stamped "25 Adj 1903"..... | 25.281 |
| Denbigh, in fifth brick from northeast corner (east side) of brick court-house, in tenth course of bricks above ground; aluminum tablet stamped "36 Adj 1903"..... | 36.193 |

From Springfield northwest via Septa and Bacons Castle¹ to Highgate.

| | |
|---|--------|
| Septa, just southeast of road forks, on west side near south corner of post office and store kept by J. H. Edward; iron post stamped "86 Adj 1903"..... | 86.852 |
| Septa, 3 miles northwest of, just south of Moonlight crossroads, west of road, on lot owned by W. L. Ward; iron post stamped "84 Adj 1903"..... | 85.044 |
| Septa, 5.3 miles northwest of, at junction with second-class road east, just south of forks, at northwest corner of lot owned by J. G. Goodrich, 25 feet southeast of Ferguson Grove Baptist Church; iron post stamped "92 Adj 1903"..... | 92.386 |

¹ An error of 1 foot between Battery Park and Scotland was adjusted arbitrarily by placing it south of Bacons Castle.

| | |
|---|-----------------|
| Bacons Castle, just south of crossroads, on east side of road, near southwest corner of store and post office; iron post stamped "84 Adj 1903"..... | Feet. 83.407 |
| Highgate, at store and post office at main forks of road; iron post stamped "75 Adj 1903"..... | 74.194 |

ISLE OF WIGHT QUADRANGLE.

[Latitude 36° 45'-37°; longitude 76° 30'-76° 45'.]

From Newport News west across James River to Battery Park, thence west to Springfield.

| | |
|--|--------|
| Battery Park, 25 feet south of boat wharf, at northwest corner (north side) of J. G. Wilson's store; iron post stamped "5 Adj 1903"..... | 5.776 |
| Smithfield, in west side (second brick from north side) of store owned by T. J. Cox, in seventeenth course of bricks above ground; bronze tablet stamped "Prim. Trav. Sta. No. 209 A, 12"..... | 13.064 |

SURRY QUADRANGLE.

[Latitude 37°-37° 15'; longitude 76° 45'-77°.]

From Highgate northwest to Scotland, thence across James River to Jamestown, thence northeast to Williamsburg.

| | |
|---|--------|
| Highgate, 2.2 miles northwest of, north of road just east of main forks, at southeast corner of store; iron post stamped "74 Adj 1903"..... | 73.729 |
| Scotland, at southeast corner east side of store kept by Mrs. W. E. Adams; iron post stamped "7 Adj 1903"..... | 6.811 |
| Jamestown, on land owned by the Association for the Preservation of Virginia Antiquities, at northwest corner of barn, on old church grounds; iron post stamped "9 Adj 1903"..... | 8.156 |

HAMPTON QUADRANGLE.

[Latitude 37°-37° 15'; longitude 76° 15'-76° 30'.]

From Yorktown southeast to point near North Newport News (mean of direct and reverse lines).

| | |
|--|--------|
| Yorktown, 3.1 miles southeast of, on Hampton-Yorktown road, at northwest corner of road southwest, 0.8 mile northwest of Harris Grove; iron post stamped "65"..... | 64.418 |
| Grafton, 0.4 mile northeast of, south of Hampton-Yorktown road, 300 feet north of wood line; iron post stamped "56"..... | 55.573 |
| Kings Corners, 0.4 mile northeast of, 0.2 mile southwest of Zion Church (colored); iron post stamped "36"..... | 35.961 |
| Moores Place, 0.1 mile southwest of, 0.4 mile east of negro Bethel Church, east of Hampton-Yorktown road; iron post stamped "31"..... | 30.786 |
| Little Bethel Church, on Yorktown-Hampton road, 5.5 miles northeast of Hampton; iron post stamped "20"..... | 19.96 |

From point near North Newport News to Newport News.

| | |
|---|--------|
| Newport News, 3.99 miles north of, road crossing on Chesapeake & Ohio Ry., southwest corner of; iron post stamped "30" ¹ | 29.441 |
|---|--------|

From point 6 miles north of Newport News southeast via Hampton to Old Point Comfort.

| | |
|---|--------|
| Hampton, 2 miles west of, on Hampton-Yorktown road, center of triangle (Newmarket Corners); iron post stamped "11" ² | 11.347 |
|---|--------|

¹ Not adjusted; closure on Coast and Geodetic Survey bench mark -0.486 foot.

² Not adjusted; closure on Coast and Geodetic Survey bench mark -0.501 foot.

Fairfax, Haymarket, Indian Head, Seneca, and Washington quadrangles.**FAIRFAX, LOUDOUN, AND PRINCE WILLIAM COUNTIES.**

The elevations in the following list were determined by primary leveling and accord with Bulletin 434, being unchanged by the 1912 adjustment.

The leveling was done in 1911 in Fairfax, Haymarket, Seneca, and Washington quadrangles by E. E. Witherspoon, and in Indian Head quadrangle by J. B. Metcalfe. Additional leveling was done in the Washington quadrangle in 1912 by F. J. McMaugh and D. H. Baldwin. All of these levelmen used wye levels except Baldwin, who used a prism level. Part of the leveling in Seneca quadrangle was done in 1906 by R. A. Farmer.

FAIRFAX QUADRANGLE.

[Latitude 38° 45'-39°; longitude 77° 15'-77° 30'.]

From Forestville south along highways to point near Andrew Chapel.

| | Feet. |
|---|----------|
| Forestville, near southeast corner of east foundation of Oliver's store; tablet stamped "344 Va"..... | 344. 405 |
| Forestville, 1 mile south of, on east end of south abutment of bridge over Cabin Hickory Run, at bend of road to west; chiseled square marked "240"..... | 236. 91 |
| Forestville, 2 miles south of, on east side of Alexandria turnpike, at junction of road to Forestville; chiseled square on rock marked "312"..... | 309. 28 |
| Forestville, 3.1 miles south of, 300 feet east of road to south, 10 feet south of road, 60 feet north of house; copper nail in root of 15-inch cedar tree marked "268.4"..... | 265. 47 |
| Kenmore, 0.2 mile east of, 100 feet east of public road south, 10 feet north of road; copper nail in root of 18-inch cherry tree marked "347.7"..... | 344. 80 |
| Andrew Chapel, 0.6 mile east of, 10 feet north of road at fork; iron post stamped "366"..... | 365. 527 |

From point near Ilda west and north along public road to Sterling.

| | |
|--|----------|
| Ilda, 1.3 miles west of, 200 feet east of road north, 20 feet south of turnpike, south of fence; nail in root of 4-inch cedar tree marked "386"..... | 383. 29 |
| Ilda, 2.2 miles west of, 300 feet west of road south, west of bridge, 12 feet north of turnpike, in front of house; nail in root of 24-inch locust tree marked "413"..... | 410. 34 |
| Fairfax Courthouse, on west edge of top of steps leading to courthouse; tablet stamped "447"..... | 446. 776 |
| Fairfax Courthouse, opposite courthouse, in front of cobbler shop under Fairfax Hotel, near edge of porch; chiseled square on west edge of cement pavement..... | 438. 36 |
| Fairfax Courthouse, 1.1 miles west of, 20 feet north of turnpike at junction of turnpikes, in root of 7-inch cedar tree; copper nail marked "424.8"..... | 421. 96 |
| Fairfax Courthouse, 2.8 miles west of, 20 feet south of turnpike, north of house; copper nail in root of large sycamore tree marked "410"..... | 406. 74 |
| Fairfax Courthouse, 3.5 miles west of, 150 feet east of crossroads, 30 feet south of road, in front of church; iron post stamped "Prim. Trav. Sta. No. 6, Va., 478, 1911"..... | 478. 167 |

| | |
|---|------------------|
| Fairfax Courthouse, 4.6 miles west of, 130 feet west of road leading to north, 230 feet west of top of hill, north of turnpike, at fence corner; copper nail in cedar stump marked "437" | Feet. 434. 34 |
| Fairfax Courthouse, 6 miles west of, 30 feet south of turnpike, 15 feet west of road to Centerville; iron post stamped "376" | 375. 893 |
| Chantilly, 600 feet west of store, 15 feet north of turnpike, 10 feet east of small stream, 3 feet south of fence; chiseled cross on rock marked "303" .. | 300. 60 |
| Chantilly, 0.6 mile west of school, 300 feet southeast of church, 50 feet south of turnpike; copper nail in 12-inch white-oak stump marked "297" .. | 294. 30 |
| Pleasant Valley, 0.9 mile east of, 0.3 mile east of road to Sterling, 300 feet west of rise, on north side of turnpike; copper nail in 12-inch cedar stump marked "274" | 271. 41 |
| Pleasant Valley, 0.6 mile east of, point on rock at junction of Sterling road with turnpike, marked "263" | 259. 33 |
| Pleasant Valley, 100 feet west of post office, in front of residence of M. E. Palmer, in concrete walk, under gate; aluminum tablet stamped "250" .. | 249. 877 |
| Pleasant Valley, 1.6 miles north of, 100 feet north of road to east to house, 25 feet north of trail to west, 20 feet west of road; copper nail in root of small tree marked "275" | 271. 85 |
| Pleasant Valley, 2.6 miles north of, 15 feet east of road, 100 feet south of road to east; copper nail in root of 12-inch black-oak tree marked "282" .. | 279. 28 |
| Willard, in northeast angle of crossroads; copper nail in root of white-oak tree marked "299.5" | 296. 4 |
| Willard, 0.3 mile north of, 40 feet east of road, 30 feet south of public road to east; copper nail in top of 2-foot stump marked "292" | 289. 36 |
| Willard, 1.5 miles north of, 100 feet north of school, opposite public road west, 15 feet east of road, north of gate; iron post stamped "276" | 276. 469 |
| Sterling, 2.2 miles south of, in southeast angle of junction of roads to Sterling, Pleasant Valley, and Ashburn, 100 feet west of road to Herndon; copper nail in root of 15-inch wild cherry tree painted "268" | 264. 80 |
| Sterling, 1.2 miles south of, 150 feet south of private road west, 250 feet south of house, 200 feet south of bend of road east, 10 feet west of road; copper nail in root of 10-inch white-oak tree marked "303" | 300. 26 |

From Pleasant Valley south along public road to point near Bull Run.

| | |
|---|----------|
| Pleasant Valley, 1.2 miles south of, 700 feet south of sharp bend to west, 25 feet south of private road; copper nail in root of 8-inch cedar tree west of road, marked "278" | 275. 58 |
| Pleasant Valley, 1.7 miles south of, point on rock in west angle of crossroads, marked "315.1" | 312 |
| Pleasant Valley, 2.7 miles south of, 20 feet north of Braddock road, in northwest angle of road; iron post stamped "Prim. Trav. Sta. No. 5, 280 Va." .. | 280. 286 |
| Pleasant Valley, 3.9 miles south of, 1.2 miles south of Braddock road, 550 feet south of private-road crossing near house, in edge of timber, east of road, in bend to east; chiseled square on stone marking land line, marked "250" | 246. 87 |
| Pleasant Valley, 5.2 miles south of, 2.5 miles south of Braddock road, west of road near bend to west, opposite home of Mrs. C. V. Gheen, in sandstone boulder; aluminum tablet stamped "285" | 284. 535 |
| Pleasant Valley, 6.3 miles south of, 0.4 mile north of Warrenton turnpike, 175 feet north of small stream east, in open field, 20 feet west of road, 2 feet west of ditch, on rock; chiseled square marked "259" | 255. 97 |
| Bull Run, 0.9 mile east of, in southeast angle of crossroads at store; chiseled square on rock, marked "302" | 298. 91 |

From point 2.1 miles west of Manassas east along public road to Lee Chapel.

| | Feet. |
|--|----------|
| Manassas, 2.1 miles west of, at Rixlew, 35 feet north of Southern Ry. tracks, 20 feet west of road; iron post stamped "Prim. Trav. Sta. No. 4, 237, 1911, Va."..... | 236. 790 |
| Manassas, 0.9 mile west of, north of road, 100 feet east of road north to house; copper nail in root of 33-inch black-oak tree, marked "271"..... | 268. 39 |
| Manassas, 100 feet southeast of railroad station, in doorstep of office building; aluminum tablet stamped "314"..... | 314. 107 |
| Manassas, 1 mile east of, 700 feet east of road crossing, opposite bend in road south, 25 feet north of tracks; chiseled square on red sandstone rock, marked "281"..... | 277. 79 |
| Manassas, 3 miles east of, 300 feet east of mouth of small run, north of railroad tracks; chiseled square on rock in cut, marked "185"..... | 182. 14 |
| Manassas, 4.3 miles east of, 20 feet south of tracks, 11 feet east of public road, 4 feet north of sign post; iron post stamped "168"..... | 168. 276 |
| Clifton, 150 feet west of station, 40 feet north of tracks, 20 feet west of road; copper nail in root of aspen tree, marked "192.4"..... | 189. 40 |
| Clifton, 1 mile southeast of, at fork of road to Manassas, south of road; copper nail in root of small white-oak tree, marked "370"..... | 366. 92 |
| Clifton, 1.7 miles southeast of, 250 feet northwest of house, in west angle of crossroads; iron post stamped "Prim. Trav. Sta. No. 3, 324, 1911 Va."... | 324. 469 |
| Clifton, 2.8 miles southeast of, in front of house, north of road, 650 feet east of bend to north; copper nail in root of 18-inch black-oak tree, marked "331"..... | 328. 06 |
| Clifton, 3.3 miles southeast of; center of Fairfax road at crossroads at store, marked "352"..... | 349 |
| Clifton, 3.8 miles east of, 0.5 mile east of Fairfax road, 220 feet east of small stream, 10 feet north of road; copper nail in 12-inch pine stump, marked "328"..... | 325. 32 |
| Clifton, 4.9 miles east of, 20 feet west of road, in front of house, 50 feet south of road east, 35 feet north of road west; iron post stamped "403"..... | 403. 043 |
| Sideburn, 1.5 miles south of, in front of Bellaire School, in east angle of crossroads; copper nail in root of black-oak tree, marked "359"..... | 355. 98 |
| Lee Chapel, 0.8 mile northwest of, 45 feet south of top of hill, west of road; copper nail in root of small pine tree, marked "402"..... | 399. 24 |
| Lee Chapel, 250 feet southwest of, in northwest angle of crossroads; iron post stamped "330"..... | 330. 169 |

From Lee Chapel north to point near Ida.

| | |
|--|----------|
| Lee Chapel, 1.7 miles north of, 50 feet northwest of crossroads, 300 feet east of white house; copper nail in top of chestnut stump, marked "372.2"... | 372. 14 |
| Burkes station, 0.25 mile west of, 15 feet south of track, 50 feet west of road crossing, 5 feet below level of track, in southeast corner of concrete culvert; aluminum tablet stamped "262"..... | 262. 178 |
| Burkes, 0.7 mile north of, in northeast corner of crossroads, just at foot of telephone pole; cross on rock, marked "375.8"..... | 375. 71 |
| Burkes station, 1.6 miles north of, in northwest corner of north-south road crossing Braddock Road; copper nail in root of pine tree, marked "371"... | 370. 88 |
| Ida, 1.2 miles south of, east of road, 150 feet south of private road, inside of fence; copper nail in root of small pine tree, marked "328"..... | 325. 33 |

HAYMARKET QUADRANGLE.

[Latitude 38° 45'–39°; longitude 77° 30'–77° 45'.]

From Bull Run south along public road to point 3 miles northwest of Manassas.

| | |
|---|-----------------|
| Bull Run, in center of south wall of bridge over, on Warrenton turnpike; iron bolt marked "184"..... | Feet. 180.68 |
| Stonehouse, 300 feet southwest of, 200 feet south of store at crossroads, in east end of north abutment of bridge over Young's Branch; aluminum tablet stamped "186"..... | 185.716 |
| Stonehouse, 1 mile south of, in front of house of J. H. Rowzie, 100 feet north of gate, east of road; copper nail in root of 6-inch leaning cedar tree, marked "241"..... | 237.73 |
| Stonehouse, 1.5 miles south of, at road leading to Balls Ford; point on rock, marked "229.5"..... | 226.5 |
| Manassas, 4.3 miles northwest of, opposite gate on private road, west of public road in bend to west; copper nail in root of small twin white-oak tree, marked "245"..... | 242.18 |
| Manassas, 3.1 miles northwest of, north of road, opposite road leading to Rixlew, inside of fence near gate; copper nail in root of 10-inch cedar tree, marked "222"..... | 218.88 |

INDIAN HEAD QUADRANGLE.

[Latitude 38° 30'–38° 45'; longitude 77°–77° 15'.]

From Lee Chapel south along public road to Pohick Creek (double-run line).

| | |
|---|--------|
| Pohick Creek, 3.7 miles northwest of, in southeast corner of crossroads; nail in root of 5-foot white-oak tree, marked "317.2"..... | 317.17 |
| Pohick Creek, 2.6 miles northwest of, 30 feet west of road north to house, 8 feet northeast of road; copper nail in root of 12-inch white-oak tree, marked "270.6"..... | 270.66 |
| Pohick Creek, 1.7 miles northwest of, 6 feet east of road; copper nail in root of red-oak tree, marked "200.6"..... | 200.58 |
| Pohick Creek, in edge of capstone to northwest abutment of old Richmond, Fredericksburg & Potomac R. R. bridge, just east of new bridge over Pohick Creek in southeast corner of abutment; surface of an offset (C. & G. S. b. m.)..... | 63.830 |

SENECA QUADRANGLE.

[Latitude 39°–39° 15'; longitude 77° 15'–77° 30'.]

From Sterling east along public road to Dranesville.

| | |
|---|---------|
| Sterling, in front of schoolhouse, 30 feet north of road to Dranesville, 0.1 mile east of railroad track, in rock; aluminum tablet stamped "Prim. Trav. Sta. No. 1, 314, 1907"..... | 310.441 |
| Sterling, 1.1 miles east of, 300 feet east of bend in road to south, 15 feet north of road; copper nail in root of 15-inch white-oak tree, marked "321"..... | 317.93 |
| Sterling, 2.1 miles east of, north of road, 150 feet east of small stream running north; copper nail in root of 12-inch white-oak tree, marked "290"..... | 286.68 |
| Sterling, 3.1 miles east of, in northeast angle of crossroads; iron post stamped "241"..... | 237.571 |

¹ For elevations in Maryland in this quadrangle see Bulletin 563.

| | |
|--|------------------|
| Dranesville, 0.4 mile west of, north of road, 150 feet northeast of house; copper nail in 10-inch cedar stump, marked "344"..... | Feet. 340. 76 |
| Dranesville, in front of S. Jenkins's hotel, south edge of road; iron post stamped "322"..... | 321. 535 |
| Dranesville, 0.25 mile east of, opposite J. F. Duke's house, south of pike, 12 feet east of 30-inch oak tree at road fork, in 20 by 8 by 8 inch rock; tablet stamped "395 Va"..... | 391. 937 |

From Edwards Ferry southeast to Dranesville.

| | |
|---|----------|
| Mahala, 50 feet north of former post office, north of pike, in big flat rock; tablet stamped "326"..... | 325. 981 |
| Daysville, J. T. Palmer's house, in south wall of west chimney; tablet stamped "Va 314"..... | 313. 900 |

WASHINGTON QUADRANGLE.¹

[Latitude 38° 45'–39°; longitude 76° 45'–77° 15'.]

From point 0.9 mile west of Tyson Crossroads south along public road to Ilda.

| | |
|---|----------|
| Tyson Crossroads, 0.9 mile west of, 25 feet south of road northeast; copper nail in root of 10-inch oak tree, marked "404.7"..... | 401. 84 |
| Tyson Crossroads, in northeast angle of, opposite Myers's store; iron post stamped "483"..... | 482. 944 |
| Tyson Crossroads, 1.1 miles southeast of, 15 feet north of culvert, 0.4 mile south of Alexandria turnpike, 10 feet east of public road; copper nail in top of 2-foot stump, marked "479"..... | 476. 475 |
| Dunn Loring, 1.7 miles south of, at Merrifield, in northwest angle of crossroads; iron post stamped "Prim. Trav. Sta. No. 1, 362, Va"..... | 361. 888 |
| Merrifield, 1.4 miles south of, 1,300 feet north of road fork, 100 feet north of small drain, on west side of road; copper nail in root of 12-inch pine tree, marked "338"..... | 334. 82 |
| Ilda, 0.9 mile north of, on railroad grade, 10 feet east of road; chiseled square on bowlder, marked "320"..... | 317. 54 |
| Ilda, 0.2 mile east of, opposite road leading to Merrifield, on south side of turnpike; iron post stamped "374"..... | 374. 054 |

From Alexandria northwest along Alexandria-Leesburg pike to Falls Church.

| | |
|---|---------|
| Alexandria, near middle of sill of northwest window of customhouse, 0.12 meter from extreme west edge of sill, 0.115 meter from extreme edge of sill; square mark (C. & G. S. b. m. G)..... | 46. 740 |
| Alexandria, 200 feet east of Union Station, opposite stairway leading to same, on west side of King Street; top of bolt at foot of steel column of Richmond, Fredericksburg & Potomac R. R. bridge, painted "U. S. B. M. 17"..... | 16. 863 |
| Alexandria, 0.94 mile north of customhouse, west end of south curbstone at intersection of Mount Vernon Avenue and King Street; telephone pole painted "U. S. 24"..... | 24. 37 |
| Alexandria, 1.4 miles northwest of, east side of road, at foot of southwest brace of standpipe tower; top of bolt, elevation painted on telephone pole near, "U. S. B. M. 140"..... | 139. 78 |
| Alexandria, 2.9 miles northwest of, 150 feet northwest of Row's store at northwest corner of crossroads; spike in telegraph pole, painted "U. S. B. M. 193"..... | 192. 90 |

¹ For elevations in Maryland in this quadrangle see Bulletin 802.

| | |
|--|---------|
| Alexandria, 4.2 miles northwest of, 250 feet north of small bridge, on west side of road, spike in telegraph pole, painted "U. S. B. M. 133"..... | 133.02 |
| Baileys Crossroads, 30 feet west of center of, on top of concrete culvert wall, west side of road..... | 252.92 |
| Baileys Crossroads, 0.6 mile northwest of, 310 feet southeast of blacksmith shop, 50 feet east of gateway at T lane west; copper nail in sycamore tree, painted "U. S. B. M. 250"..... | 279.45 |
| Falls Church, at northwest corner of Broad and Washington streets, on stone..... | 330.06 |
| Falls Church, in south face at southwest corner of I. O. O. F. building; aluminum tablet stamped "338"..... | 337.429 |

From Alexandria west along Southern Ry. to Burke station.

| | |
|---|---------|
| Alexandria, opposite west end of waiting room at Union Station; north rail of north track..... | 33.0 |
| Seminary station, 140 feet east of road crossing north of track; spike in telegraph pole, painted "U. S. B. M. 38"..... | 37.59 |
| Cameron Run, 850 feet east of, on top of southwest corner of south abutment of Richmond, Fredericksburg & Potomac R. R. bridge, about 4 feet above track; aluminum tabled stamped "54"..... | 54.570 |
| Cameron Run, south track of bridge over; north rail..... | 54.5 |
| Cameron Run, surface of water July 15, 1912..... | 42.2 |
| Lincolnia, in front of station; top of north rail of north track..... | 98.7 |
| Lincolnia, 110 feet west of road crossing, 20 feet south of track; spike in telephone pole, painted "U. S. B. M. 100"..... | 99.66 |
| Edsalls station, 0.4 mile east of, on bridge over small creek, south side of north track; bolt in 8 by 8 inch timber 1 foot from west end..... | 127.67 |
| Edsalls, opposite station; top of north rail of north track..... | 147.4 |
| Springfield, 510 feet east of station, west abutment of railroad bridge over Back Lick Run, in top stone at south end; aluminum tablet stamped "215"..... | 215.155 |
| Springfield, 130 feet east of road crossing, opposite station; top of south rail of north track..... | 222.1 |
| Springfield, 0.8 mile west of, at second-class crossroads; top of north rail, "250" painted on telephone pole northeast of crossing..... | 250.0 |
| Ravensthorpe, 1 mile east of, east end of steel and timber trestle about 75 feet high, south side; top of bolt, painted "U. S. B. M. 234"..... | 233.66 |
| Ravensthorpe, 450 feet east of station, at road crossing; top of north rail of north track..... | 239.6 |
| Ravensthorpe, 80 feet northeast of station, 45 feet north of track, 10 feet south of road; spike in telegraph pole, painted "U. S. B. M. 289"..... | 239.18 |
| Ravensthorpe, 0.7 mile west of station, 60 feet northwest of overhead highway bridge, 30 feet north of track; spike in telegraph pole, painted "U. S. B. M. 323"..... | 322.80 |
| Burke, in front of station; top of south rail of north track..... | 275.2 |
| Burke, 0.25 mile west of, 15 feet south of track, 50 feet west of road crossing 5 feet below level of track, in top of southeast corner of concrete culvert; aluminum tablet stamped "262"..... | 262.178 |

From Alexandria north to East Arlington (leveled twice).

| | |
|--|-------|
| Braddock Heights, 950 feet west of station, at northeast corner of crossroads; top of hydrant..... | 50.30 |
| Braddock, in front of station; top of west rail of west track..... | 33.6 |
| Lloyd, in front of station; top of west rail of west track..... | 30.3 |
| Delray, 20 feet north of station; top of west rail of west track..... | 42.5 |

| | Feet. |
|---|---------|
| Mount Ida, in front of station; top of west rail of west track..... | 37. 3 |
| St. Asaph, in front of station; top of west rail of east track..... | 31. 6 |
| St. Elmo, west abutment of Southern Ry. bridge, in top of north end; aluminum tablet stamped "36"..... | 35. 958 |
| Humes Spring, about 500 feet southeast of; copper nail in large oak tree painted "U. S. B. M. 31"..... | 30. 82 |
| St. Elmo, at road fork; spike in telegraph pole, painted "U. S. B. M.".... | 46. 14 |
| St. Elmo, 0.6 mile west of, at north end of bridge over Four Mile Run, east side; copper nail in 12 by 12 inch timber..... | 29. 53 |
| St. Elmo, 1.4 miles north of; top of north end of east wall of culvert..... | 50. 28 |
| East Arlington, 0.1 mile south of, at front entrance to Mount Zion Baptist Church, in top of top step, 0.5 foot north of south end, 0.15 foot west of east edge; chiseled square..... | 145. 42 |
| East Arlington, 60 feet southwest of Hyman's store; chisel mark on top of lone stone..... | 107. 77 |

From Long Bridge west to East Arlington, thence north to Rooslyn.

| | |
|---|---------|
| Long Bridge, west end of south abutment of new bridge, chiseled square (Pennsylvania R. R. b. m. 143a)..... | 20. 56 |
| Clark station on Falls Church Electric Ry.; top of north rail..... | 96. 5 |
| Clark station, 0.3 mile north of, 100 feet north of iron gate in Arlington National Cemetery wall, west side of road; spike in west side of telegraph pole, painted "U. S. B. M. 65"..... | 65. 31 |
| Clark station, 1.1 miles north of, 100 feet north of Arlington station, opposite "Sheridan Gate"; east rail of electric railway..... | 50. 17 |
| Rooslyn, in west face top of south end of stone doorsill of Arlington National Bank, 0.3 foot east of west edge and 0.5 foot north of south edge; chiseled square..... | 60. 095 |

From Chain Bridge northwest along Leesburg-Georgetown pike to Langley, thence southwest to point 1.1 miles south of Tyson Crossroads.

| | |
|--|----------|
| Chain Bridge, 15 feet southwest of southeast corner of lower half of west abutment; chiseled square..... | 5. 17 |
| Chain Bridge, north end of west abutment, top of parapet wall, level with bridge floor, 12 inches southwest of northeast corner, 3.43 feet higher than iron pin in foundation masonry, 4 feet north of bridge seat and on first course below bridge seat; aluminum tablet stamped "46"..... | 45. 922 |
| Chain Bridge, 1.4 miles northwest of, at southwest corner of T road south at blacksmith shop, in north root, blazed maple corner tree; copper nail..... | 229. 54 |
| Chain Bridge, 1.6 miles northwest of, north side of road, in southwest root of 4-foot lone maple tree; iron nail..... | 235. 53 |
| Chain Bridge, 2.2 miles northwest of, 60 feet west of center of Leichter's entrance drive; copper nail in root of 12-inch cedar tree..... | 266. 54 |
| Joseph Leiter's residence, in foundation near northwest corner, 6 feet above ground; bronze tablet stamped "164.8 1912" ¹ | 164. 811 |
| Langley, south face at southeast corner stone of foundation of Town Hall; aluminum tablet stamped "275"..... | 274. 503 |
| McLean, 130 feet northeast of Washington & Old Dominion Electric Ry. crossing, in north gutter of road, in south side of leaning cherry tree; copper nail..... | 284. 77 |

| | |
|--|---------|
| McLean, in front of Washington & Old Dominion Electric Ry. station; top of rail..... | 287.1 |
| Lewinsville, 30 feet east of northeast corner of crossroads; copper nail in root of large aspen tree..... | 368.56 |
| Lewinsville, in front stone foundation wall of porch of store of Anderson Mankin; aluminum tablet (set vertically) stamped "366"..... | 365.713 |
| Lewinsville, 0.3 mile south of, at T road west, southeast corner of private road east, on top of stone bracing corner fence post; chiseled square.... | 332.50 |
| Lewinsville, 1 mile southwest of, at summit of road; top of gate rest..... | 409.1 |
| Lewinsville, 1.6 miles southwest of, 0.4 mile east of Alexandria-Leesburg pike, south side of road, southwest of Lorin Magarty's house north of road, in trunk of persimmon tree just east of small wash; copper nail..... | 375.84 |
| Tyson Crossroads, 0.9 mile southeast of, along Alexandria-Leesburg pike, at north corner of T road northeast; top of painted upper staple cemented in 6-foot masonry fence post 3 feet in diameter (fence not yet built).... | 450.31 |
| Tyson Crossroads, 1.1 miles southeast of, 15 feet north of culvert, 0.4 mile south of Alexandria-Leesburg pike, 10 feet east of public road; copper nail in 2-foot stump, marked "479"..... | 476.475 |
| From point 0.9 mile southeast of Tyson Crossroads southeast along Alexandria-Leesburg pike to Falls Church, thence east along road through Cherrydale to Roslyn. | |
| West Falls Church, 1.6 miles northwest of, on east side of road, opposite house of James F. Nelson; copper nail in root of 20-inch sycamore tree.. | 429.36 |
| West Falls Church, 0.6 mile northwest of, at south side of entrance drive to large house, 500 feet west of pike; copper nail in 32-inch locust tree.. | 398.73 |
| West Falls Church, 0.3 mile northwest of, on pike at secondary crossroad, at top of round wooden post 3 feet high, the bottom level with road intersection; copper nail..... | 382.68 |
| West Falls Church, in front of post office; top of rail of Washington & Virginia Electric Ry..... | 340.0 |
| West Falls Church, in front of Southern Ry. station; top of rail..... | 339.3 |
| West Falls Church, north corner of West and Broad streets, in stone embedded in root of maple tree; chiseled square..... | 336.22 |
| West Falls Church, 0.5 mile southeast of, on Broad Street, on center of top of east end wall of concrete culvert; chiseled square painted "312"..... | 311.90 |
| Falls Church, southeast face of south corner of church, top foundation stone 4 feet above ground; aluminum tablet stamped "338"..... | 337.420 |
| Falls Church, north corner of Broad and Washington streets; top of corner stone post..... | 330.06 |
| East Falls Church, southwest of crossing, on center of top of north end wall of concrete culvert; chiseled square..... | 291.02 |
| Falls Church, in front of Southern Ry. station; top of rail..... | 301.2 |
| Falls Church, 1.2 miles northeast of station, at crossroads, 67.4 feet northwest of north corner stone and 0.625 foot lower than its highest point; copper nail in root of 3-foot chestnut tree..... | 374.63 |
| Highview Park; doorsill of Kelvey Methodist Church (colored)..... | 405.02 |
| Highview Park, north face at northwest corner of schoolhouse, in center of top course of foundation brick; chiseled cross painted "415 U. S. B. M.".. | 414.93 |
| Highview Park, at northeast corner of crossroads, in top of stump of telephone pole behind a used telephone pole and level with road intersection; copper nail..... | 403.48 |
| Livingstone Heights, in front of Washington & Old Dominion Electric Ry. station; top of rail..... | 402.6 |
| Cherrydale Heights, at junction of street to south at curve; northwest corner of concrete flagstone under pump (not marked)..... | 364.41 |

| | |
|---|-----------------|
| Cherrydale, 250 feet west of Washington & Old Dominion Electric Ry. station south side of road, in root on south side of 2-foot oak tree; copper nail..... | Feet. 305.40 |
| Cherrydale, in front of Washington & Old Dominion Electric Ry. station; top of rail..... | 286.2 |
| Dominion Heights, in front concrete-faced wall of schoolhouse, 1 foot west of northeast corner, 2.4 feet above ground; aluminum tablet stamped "267"..... | 267.062 |
| Dominion Heights, in front of Washington & Old Dominion Electric Ry. station; top of rail..... | 257.9 |
| Rosslyn, 1.8 miles west of, west side of Bluemont Division of Washington & Old Dominion Electric Ry. bridge over highway, south side of highway, on center of concrete end wall of iron culvert; chiseled square painted "190"..... | 189.92 |
| Rosslyn, 1.2 miles west of, 84 feet east of road fork to south, in trunk of leaning cherry tree; copper nail, tree painted "B. M. 223"..... | 222.69 |
| Rosslyn, 1 mile west of, at southeast corner of crossroads, on corner stone post 0.8 foot lower than ground at intersection (not marked)..... | 222.37 |
| Rosslyn, 0.7 mile west of, at iron tank watering trough, on west end of south concrete end wall of iron culvert under electric railway; chiseled square painted "152"..... | 151.97 |
| Rosslyn, Arlington National Bank, in west face at northeast corner, in sandstone water table; aluminum tablet stamped "62"..... | 61.971 |
| Rosslyn, Arlington National Bank, on south end of west doorsill; chiseled square..... | 60.095 |
| Boydton, Brookneal, Cahas Mountain, Callands, Chatham, Clarksville, Clover, Lynchburg, Moneta, Nathalie, and Virgilina quadrangles. | |

CAMPBELL, CHARLOTTE, HALIFAX, MECKLENBURG, AND PITTSYLVANIA COUNTIES.

The elevations in the following list result mainly from a line of levels run in 1905 by A. H. Horton, of the Water-Resources branch of the Survey from a bench mark at Clarksville established by the precise-level party of R. L. Libbey. The line follows Roanoke River (approximately) from Clarksville to Hurt; thence the railroad via Elba to Rocky Mount, where it is connected with a bench mark also established by Libbey. A spur line extends 14 miles down Roanoke River from Clarksville, and another line extends from Toshes to Deerwood Ford.

Additional work was done in 1908 by E. O. Halbert, in cooperation with the State, in Clarksville, Clover, Nathalie, and Virgilina quadrangles, based on bench marks at Clarksville, Randolph, and Clarkton.

CLARKSVILLE QUADRANGLE.¹

[Latitude 36° 30'–36° 45'; longitude 78° 30'–78° 45'.]

From Clarksville northwest along Roanoke River to Bailey's plantation.

| | |
|--|------------------|
| Bluestone Creek, at mouth of, 250 feet north of Roanoke River, 120 feet east of Skipwith's (deserted) mill, top of low embankment; iron post stamped "284 Adj 1903"..... | Feet. 283.550 |
|--|------------------|

¹ For precise-level elevations in Clarksville quadrangle see pp. 8-9.

| | |
|---|------------------|
| Abbyville, 1 mile below, in pasture lot of William Russell, 400 feet from river, in top of granite bowlder; aluminum tablet stamped "290 Adj 1903"..... | Feet. 289.683 |
| Abbyville, 2 miles above, on left bank of Roanoke River, at foot of bluff on McLean's plantation, 100 feet north of an old mill, set vertically in a granite ledge; aluminum tablet stamped "296 Adj 1903"..... | 296.192 |
| Abbyville, 5 miles above, on left bank of river, 1,300 feet below mouth of Difficult Creek, which is on right bank of river, set vertically in a rock ledge on Bailey's plantation; aluminum tablet stamped "312 Adj 1903"..... | 311.639 |

From Clarksville west along Southern Ry. to point 2 miles west of Nelson.

| | |
|---|---------|
| Clarksville, in southeast corner of west abutment pier at Southern Ry. bridge; aluminum tablet stamped "288"..... | 287.568 |
| Clarksville Junction, in front of station; top of rail..... | 287.8 |
| Clarksville Junction, 200 feet west of, at railroad bridge; top of rail..... | 292.6 |
| South Clarksville, in front of station; top of rail..... | 357.7 |
| South Clarksville, 1.2 miles west of, east end of small cut, sandstone bowlder 15 feet north of track; top marked "G. S. □ 376 B. M."..... | 376.20 |
| South Clarksville, 2.2 miles west of, 300 feet north of track, in south face of chimney of George Day's 1½-story log house, 18 inches above ground; aluminum tablet stamped "420"..... | 419.574 |
| South Clarksville, 3 miles west of, 50 feet north of track, at west end of fill, inside of fence, in base of white-oak tree; spike..... | 338.80 |
| South Clarksville, 3.4 miles west of, 50 feet north of track, on public road, in root of large white-oak tree; railroad spike..... | 436.99 |
| Buffalo Junction, in front of station; top of rail..... | 429.8 |
| Buffalo Junction, 1.1 miles west of, 120 feet south of railroad track south of public road, in foot of oak tree; spike..... | 468.04 |
| Buffalo Junction, 2 miles west of, 200 feet south of railroad, in north face of chimney of H. T. Arrington's 1½-story house, 18 inches above ground; aluminum tablet stamped "471"..... | 470.518 |
| Buffalo Junction, 4.8 miles west of, brick railroad culvert, in top of south head wall; aluminum tablet stamped "423"..... | 423.408 |
| Nelson, in front of station; top of rail..... | 429.9 |

CLOVER QUADRANGLE.

[Latitude 36° 45'–37°; longitude 78° 30'–78° 45'.]

From Difficult Creek northwest along Roanoke River to Clarks Ferry.

| | |
|--|---------|
| Lacks Ferry, 2 miles below, right bank of Roanoke River, 125 feet south of large double gum tree and large double white-oak tree, 250 feet from edge of river, 1 foot above line between properties of Alexander M. Coleman and Charles Wadkins; iron post stamped "315 Adj 1903"..... | 315.285 |
| Lacks Ferry, 1,100 feet above, on left bank of river, 50 feet from edge of river, in rock ledge; aluminum tablet stamped "323 Adj 1903"..... | 322.733 |
| Beatrice, about 100 feet from former post office; iron post stamped "479 Adj 1903"..... | 479.368 |
| Beatrice, 3.4 miles northwest of, road forks at Black Castle schoolhouse; iron post stamped "489 Adj 1903"..... | 489.150 |
| Randolph, in left abutment downstream side of Southern Ry. bridge across Roanoke River; copper bolt in cement in capstone, stamped "341 Adj 1903"..... | 340.657 |
| Clarks Ferry, 0.8 mile north of, in west side, near southwest corner of foundation of T. C. Watkin's house; aluminum tablet stamped "453 Adj 1903"..... | 452.563 |

From Randolph southwest along Southern Ry. to point 1 mile southwest of Clover.

| | Feet. |
|--|----------|
| Randolph, in left abutment downstream side of railroad bridge across Roanoke River; copper bolt in capstone, stamped "341"..... | 340. 657 |
| Randolph, railroad bridge over Roanoke River; top of rail..... | 346. 1 |
| Roanoke River; surface of water under bridge Sept. 30, 1908..... | 306 |
| Clover, in front of station; top of rail..... | 491. 8 |
| Clover, in face of division wall between Bank of Clover and post office, on west side of Main Street; aluminum tablet stamped "506"..... | 505. 789 |

NATHALIE QUADRANGLE.

[Latitude 36° 45'-37°; longitude 78° 45'-79°.]

From point near Watkins northwest along Roanoke River to Clarkton.

| | |
|---|------------|
| Watkins, 0.33 mile west of post office, in southwest corner of four corners; iron post stamped "490 Adj 1903"..... | 490. 106 |
| Watkins, 1.2 miles west of, north of road, 100 feet northeast of I. C. Scott's mail box; corner of a stone post 1 foot above ground..... | 461. 74 |
| Noland, north of road, 85 feet east of post office and store; iron post stamped "503 Adj 1903"..... | 503. 070 |
| Coles Ferry, on hill south of, opposite Mr. Stearn's house, on right bank, in large boulder embedded in ground; aluminum tablet stamped "401 Adj 1903"..... | 401. 429 |
| Coles Ferry, 3 miles above, on north side of river road, on Bruce's estate near H. C. Gilliland's house; iron post stamped "368 Adj 1903"..... | 367. 973 |
| Clarkton, in grass plot between Clark's store and station; iron post stamped "393 Adj 1903"..... | 1 386. 434 |

From Houston north along Norfolk & Western Ry. to Clarkton.

| | |
|---|----------|
| Neathery, in front of station; top of rail..... | 495. 0 |
| Neathery, 0.2 mile north of, 10 feet west of track, in top of west head wall of small stone railway culvert; aluminum tablet stamped "482"..... | 481. 977 |
| Neathery, 3.3 miles north of, 10 feet east of track, in top of east head wall of small stone railway culvert; aluminum tablet stamped "534"..... | 533. 801 |
| Crystal Hill, in front of station; top of rail..... | 564. 3 |
| Crystal Hill, 1.9 miles north of, 200 feet south of road crossing, 10 feet west of track, in top of west head wall at small railway culvert; aluminum tablet stamped "567"..... | 566. 731 |
| Lennig, in front of station; top of rail..... | 576. 7 |
| Lennig, 2.3 miles north of, 20 feet west of track, in top of west head wall of small railway culvert; aluminum tablet stamped "531"..... | 530. 543 |
| Nathalie, in front of station; top of rail..... | 524. 5 |
| Nathalie, 1.8 miles north of, top of west head wall of small railway culvert; aluminum tablet stamped "432"..... | 431. 738 |

From Scottsburg northeast along Southern Ry. to point near Clover.

| | |
|--|----------|
| Clover, 5 miles south of, 2,100 feet north of overhead bridge, top of west head wall of stone railway culvert; aluminum tablet stamped "375".... | 374. 513 |
| Clover, 2.7 miles south of, top of east catch wall of south abutment of railway bridge; aluminum tablet stamped "363"..... | 362. 656 |

¹ The elevation given is corrected for a mistake of 6.814 feet found October, 1908.

LYNCHBURG W. QUADRANGLE (embracing Gladys and Leesville 15' quadrangles).

[Latitude 37°-38° 30'; longitude 79°-79° 30'.]

From Perth west along Roanoke River to Hurt.

| | |
|--|------------------|
| McKeever Ferry, about 0.3 mile east of road forks, 75 feet south of T. L. Rudder's house, in a 3-foot turkey-oak tree; aluminum tablet stamped "545 Adj 1903"..... | Feet. 545.008 |
| Green Hill, at road forks to ferry; iron post stamped "510 Adj 1903"..... | 509.961 |
| Cedar Forest, 150 feet east of Mrs. E. Hendrick's store, at corner of fence; iron post stamped "540 Adj 1903"..... | 539.844 |
| Cedar Forest, 3 miles northwest of, south of road, opposite Blackstock schoolhouse, in 3-foot oak tree; aluminum tablet stamped "702 Adj 1903"..... | 701.952 |
| Level Run, 2 miles northeast of, at road forks near J. B. Moses's farm; iron post stamped "704 Adj 1903"..... | 703.894 |
| Level Run, north of road opposite post office, in 2-foot oak tree; aluminum tablet stamped "719 Adj 1903"..... | 718.491 |
| Level Run, 3 miles northwest of, about 200 feet south of Sandy Coleman's house, on Hubbard's plantation, in rock ledge west of road; aluminum tablet stamped "694 Adj 1903"..... | 694.144 |
| Grit, in road in front of A. M. Peak's house, in south side of a 4-foot white-oak tree; aluminum tablet stamped "784 Adj 1903"..... | 783.978 |
| Grit, 2 miles northwest of, in forks of road at top of hill above mill creek ford; iron post stamped "728 Adj 1903"..... | 727.702 |
| Hurt, 0.5 mile east of, in a 2½-foot oak tree at top of hill west of Reed Creek, south of road on Dr. Adams's plantation; aluminum tablet stamped "710 Adj 1903"..... | 710.330 |
| Hurt, in right abutment (upstream side) of Southern Ry. bridge; top of southwest bolt fastening upstream and post set to abutment..... | 545.489 |

From Hurt south along Southern Ry. to point near Elba.

| | |
|--|---------|
| Hurt, in ground at east post of "Welcome" gate at Hurt's plantation; iron post stamped "559 Adj 1903"..... | 558.871 |
| Motley, 2 miles north of, on west side of railroad about 30 feet from track, between mileposts 201 and 202, in a 4-foot oak tree; aluminum tablet stamped "658 Adj 1903"..... | 658.418 |
| Motley, in ground at G. W. Shuler's store, at east corner; iron post stamped "771 Adj 1903"..... | 770.529 |
| Sycamore, 0.25 mile south of station, in north side of north chimney of G. W. Ramsey's house; aluminum tablet stamped "751 Adj 1903"..... | 750.982 |
| Elba, 3 miles north of, on west side of road from Elba to Sycamore, 600 feet south of railroad crossing, on east side of track, directly opposite Walton's mail box; iron post stamped "853 1903"..... | 853.149 |
| Elba, 2 miles north of, east of railroad, near first sign "Station 1 mile" referring to Elba, in a tree; aluminum tablet stamped "864 Adj 1903".... | 864.126 |

CHATHAM QUADRANGLE.

[Latitude 36° 45'-37°; longitude 79° 15'-79° 30'.]

From Elba west along Southern Ry. to Toches.

| | |
|---|-----------|
| Elba, 150 feet north of Mrs. Shelton's store, at southeast corner of Mrs. E. W. Shelton's ground; iron post stamped "844 Adj 1903"..... | 843.889 |
| Farmers, at northwest corner of E. H. L. Farmer's house, east of railroad, 60 feet from track; iron post stamped "1044 Adj 1903"..... | 1,044.226 |
| Pittsville, 1 mile east of, in ground at road forks; iron post stamped "965 Adj 1903"..... | 965.899 |

| | |
|---|-------------------|
| Toshes, 1,500 feet east of, in railroad cut east of Toshes, 140 feet west of west end of trestle across Buck Branch, tributary to Fryingspan Creek, south of railroad, at east end of rock ledge; aluminum tablet stamped "681 Adj 1903"..... | Feet. 681. 203 |
| Toshes, 125 feet south of post office and store (property of C. S. Bennett), 25 feet east of scale house, in rock ledge; aluminum tablet stamped "695 Adj 1903"..... | 695. 135 |

MONETA QUADRANGLE.

[Latitude 37°-37° 15'; longitude 79° 30'-79° 45'.]

From Toshes north along highways to Deerwood Ford (spur line).

| | |
|--|---------|
| Pig River, 1 mile south of bridge across, south of road, 0.25 mile above Graves's new dam on Pig River, in 4-foot white-oak tree; aluminum tablet stamped "625 Adj 1903"..... | 624. 38 |
| Menla, about 1.5 miles southeast of, directly east of Frank Graves's house, 50 feet below his mail box, in east side of a 3-foot oak tree; aluminum tablet stamped "734 Adj 1903"..... | 733. 79 |
| Menla, in front of J. T. Robinson's house, west of road, on east side of 4-foot oak tree; aluminum tablet stamped "862 Adj 1903"..... | 861. 92 |
| Deerwood Ford, on Roanoke River, in northeast stone chimney of G. L. English's house; aluminum tablet stamped "618 Adj 1903"..... | 620. 87 |
| Deerwood Ford, on sycamore tree on left bank of Roanoke River near transit station 2681+15; Virginia Ry. bench mark..... | 601. 62 |

CALLANDE QUADRANGLE.

[Latitude 36° 45'-37°; longitude 79° 30'-79° 45'.]

From Toshes west along Southern Ry. to Glade Hill.

| | |
|--|-------------|
| Sandy Level, in quartz ledge near road crossing of Reddies Creek; aluminum tablet stamped "660 Adj 1903"..... | 659. 953 |
| Ajax, 12 feet south of track, 450 feet west of crossing, east side of ledge of rock; aluminum tablet stamped "873 Adj 1903"..... | 872. 937 |
| Penhook, 500 feet west of station, 8 feet south of track, in rock ledge; aluminum tablet stamped "982 Adj 1903"..... | 981. 591 |
| Novelty, in ground at angle of store (former post office); iron post stamped "1009 Adj 1903"..... | 1, 008. 579 |
| Union Hall, in north face of chimney of Dudley & Co.'s store; aluminum tablet stamped "1006 Adj 1903"..... | 1, 005. 357 |
| Glade Hill, 1.5 miles east of, in east side of south chimney of Mrs. Matilda Bird's house, 350 feet north of track; aluminum tablet stamped "1008 Adj 1903"..... | 1, 007. 352 |
| Glade Hill, in a 3-foot chestnut oak tree, 100 feet east of former post office, 65 feet south of track; aluminum tablet stamped "1070 Adj 1908"..... | 1, 069. 611 |

CAHAS MOUNTAIN QUADRANGLE.

[Latitude 37°-37° 15'; longitude 79° 45'-80°.]

From Glade Hill west along Southern Ry. to Rocky Mount.

| | |
|---|-------------|
| Redwood, 2 miles east of, 125 feet north of track on Jas. O. Perdies's farm, 30 feet west of west end of second trestle west of Glade Hill, on left bank of small branch, in lower of two small rock ledges; aluminum tablet stamped "1060 Adj 1903"..... | 1, 069. 638 |
| Redwood, in small rock ledge in front of Perdies Farm; aluminum tablet stamped "1178 Adj 1908"..... | 998 |
| Redwood, about 0.5 mile west of, 300 feet west of track, in east end of a large stone chimney; aluminum tablet stamped "1138 Adj 1908"..... | |

| | |
|--|---------------------|
| Rocky Mount, 2.5 miles east of, 1,200 feet west of milepost 34, 75 feet west of railroad crossing, 9 feet south of center of track; iron post stamped "1193 Adj 1903" | Feet. 1, 192. 84 |
| Rocky Mount, 1.8 miles east of, in southeast wing wall of Norfolk & Western Ry. concrete culvert 1828, about 700 feet northeast of sign "1 mile to station;" aluminum tablet stamped "1106 Adj 1903" | 1, 106. 27 |

BOYDTON QUADRANGLE.

[Latitude 36° 30'–36° 45'; longitude 78° 15'–78° 30'.]

From Clarksville east 14 miles down Roanoke River to Taylors Ferry (double spur line).

| | |
|--|---------|
| Clarksville, 2.5 miles below, on right bank of river on C. S. Hito's plantation, about 340 feet from bank of river, in granite ledge on left bank of a small ditch; aluminum tablet stamped "273 Adj 1903" | 273. 00 |
| Clarksville, 7 miles below, opposite J. T. Lewis's plantation; opposite lower end of Finches Island, in granite ledge projecting from left bank of river; aluminum tablet stamped "250 Adj 1903" | 249. 85 |
| Island Creek, 215 feet from right bank, 300 feet from river, in a granite ledge on James Bulloch's plantation; aluminum tablet stamped "259 Adj 1903" | 259. 15 |
| Eagle Point, 1,500 feet east of ruins of mill, at foot of slope, 100 feet below Hospital Spring on Dr. Wimbish's plantation, in granite ledge; aluminum tablet stamped "239 Adj 1903" | 239. 35 |

BROOKNEAL QUADRANGLE.

[Latitude 37°–37° 15'; longitude 78° 45'–79°.]

From Brookneal to Perth.

| | |
|--|---------|
| Brookneal, on east side of road to ferry, nearly opposite May's cash store, about 75 feet north of Baptist Church; iron post stamped "564 Adj 1903" | 564. 15 |
| NOTE.—Permission to destroy this b. m. was granted Feb. 25, 1913. | |
| Brookneal, on William Scott's plantation, 135 feet northwest of center of road to ferry, 50 feet from low-ground cornfield, about 350 feet north from ferryman's house at ferry, in rock ledge flush with ground; aluminum tablet stamped "388 Adj 1903" | 388. 00 |
| Brookneal, 2.3 miles southwest of, about 20 feet from northwest corner of Hickory Road Church, in an 18-inch oak tree; aluminum tablet stamped "599 Adj 1903" | 599. 17 |
| Perth, 225 feet northeast of store and former post office, south of road, on W. H. and J. L. Glass's property; iron post stamped "612 Adj 1903" | 611. 90 |

VIRGINILNA QUADRANGLE.

[Latitude 36° 30'–36° 45'; longitude 78° 45'–79°.]

From Virgilina west along Southern Ry. to Denniston, thence north along Norfolk & Western Ry. to Houston.

| | |
|--|---------|
| Virgilina, in front of station; top of rail | 516. 1 |
| Christie, in front of station; top of rail | 479 |
| Mayo (3.8 miles west of Christie), 300 feet east of station, top of east head wall of concrete railway culvert; aluminum tablet stamped "346" | 345. 60 |
| Mayo, in front of station; top of rail | 344. 9 |
| Mayo, 1.9 miles west of, in southwest corner of east abutment of railway bridge over Hyco Creek; aluminum tablet stamped "336" | 335. 40 |
| Denniston, 50 feet north of Norfolk & Western Ry. station, in top of east head wall of small concrete railway culvert; aluminum tablet stamped "409" | 408. 40 |

| | |
|--|-------------------|
| Cluster Springs, 300 feet west of station, in front (brick) wall of Traynham Bros.' store; aluminum tablet stamped "499"..... | Feet. 499. 446 |
| Cluster Springs, in front of station; top of rail..... | 493. 3 |
| Cluster Springs, 3.5 miles north of, 5 feet east of track, in top of head wall of small concrete railway culvert; aluminum tablet stamped "339"..... | 339. 249 |
| South Boston, railway bridge over Dan River; top of rail..... | 336. 6 |
| Dan River, under bridge; water surface Sept. 17, 1908..... | 302 |
| South Boston, in northeast corner of north abutment pier at Norfolk & Western Ry. bridge over Dan River; aluminum tablet stamped "331"..... | 330. 976 |
| South Boston, in front of station; top of rail..... | 334. 4 |
| South Boston, 3.4 miles north of, 15 feet east of track, top of east head wall at small stone railway culvert; aluminum tablet stamped "447"..... | 447. 153 |
| Houston, in front of station; top of rail..... | 385. 6 |
| Houston, 0.7 mile north of, 20 feet west of track, in top of west head wall of small railway culvert; aluminum tablet stamped "381"..... | 380. 827 |

From South Boston northeast along Southern Ry. to Scottsburg.

| | |
|---|----------|
| South Boston, in front of station; top of rail..... | 333. 4 |
| Wolftrap, 1.8 miles south of, 800 feet south of milepost 34, in top of southeast corner of east head wall of stone railway culvert; aluminum tablet stamped "318"..... | 318. 117 |
| Wolftrap, in front of station; top of rail..... | 359. 2 |
| Scottsburg, 1.7 miles south of, 10 feet west of track, 300 feet north of whistle post, in top of west head wall of small concrete railway culvert; aluminum tablet stamped "331"..... | 331. 421 |
| Scottsburg, in front of station; top of rail..... | 352. 8 |

Bonsacks, Craigs Creek, Eagle Rock, and Natural Bridge quadrangles.

BOTETOURT, CRAIG, AND ROCKBRIDGE COUNTIES.

The elevations in the following list were determined by primary leveling and accord with Bulletin 434.

The leveling was done in Bonsacks and Natural Bridge quadrangles in 1905 by T. A. Green; in Craigs Creek quadrangle in 1907 by R. S. Deemer and in 1913 by H. S. Senseney; and in Eagle Rock quadrangle in 1905 by Green, in 1907 by Deemer, and in 1913 by Senseney.

BONSACKS QUADRANGLE.

[Latitude 37° 15'–37° 30'; longitude 79° 45'–80°.]

At Fincastle.

| | |
|--|------------------|
| Fincastle, southeast of courthouse, outside fence; top of cornerstone, telephone pole is marked "U. S. B. M. 1258.5"..... | et 1, 258. 07 |
| Fincastle, south side of Botetourt County courthouse, 10 feet west of front entrance, in stone step; aluminum tablet..... | 1, 256. 696 |
| Fincastle, 0.4 mile west of, main crossroad, west of four corners; nail in hub on cedar tree, marked "U. S. T. P. 1275"..... | 1, 274. 89 |

CRAIGS CREEK QUADRANGLE.

[Latitude 37° 30'–37° 45'; longitude 80°–80° 15'.]

From Hebron Church north along Craig Valley R. R. to Given.

| | |
|---|-------------|
| Hebron Church, at road leading southeast; paint spot on stone, marked "1196"..... | 1, 195. 54 |
| Hebron Union Church, 1 foot south of east entrance to, in stone wall; aluminum tablet stamped "1192"..... | 1, 191. 387 |

| | |
|---|--------------------|
| Hebron Church, 0.1 mile north of, at road north; paint spot on rock, marked "1161" | Fest. 1, 160.86 |
| Hebron Church, 0.2 mile north of, road at hilltop, house to west, marked "1192" | 1, 191.8 |
| Hebron Church, 0.4 mile north of, at road forks, west side of road; on root of tree marked "1196" | 1, 195.29 |
| Hebron Church, 1.5 miles north of, at road leading northwest, south side of road; paint spot on large stone, marked "1178" | 1, 177.74 |
| Given, 1 mile south of, road at bend to north | 1, 209.07 |
| Given, 0.9 mile south of, railroad crossing; center of southwest rail, marked "1286" | 1, 286.13 |
| Given, on northeast end of cattle stop; bolt marked "1288" | 1, 287.36 |
| Given, 0.42 mile northeast of, west side of track, on first course of stone, at northwest corner of culvert; aluminum tablet stamped "1274" | 1, 274.006 |

EAGLE ROCK QUADRANGLE.

[Latitude 37° 30'–37° 45'; longitude 79° 45'–80°.

From Springwood southwest along highway to Fincastle.

| | |
|--|------------|
| Springwood, in center of bridge; nail (elevation of water surface in James River, 825) | 857.43 |
| Forks at mill, center of road; point on rock, marked "875" | 874.63 |
| Bridge over stream (water surface=888) | 890.64 |
| Springwood, 1.2 miles west of, on ledge of rocks, north side of road; cut square marked "U. S. B. M. 1000" | 900.58 |
| Springwood, 2 miles west of, at Shark's store, on south side of road, just east of crossroads, on ledge of rock; cut square marked "U. S. B. M. 1059" .. | 1, 058.81 |
| Springwood, 3 miles southwest of, on south side of road, just east of main forks, on ledge; cut square marked "U. S. B. M. 1120" | 1, 119.98 |
| Road to right through gate, south side of road; point on rock, marked "1158" | 1, 157.31 |
| Springwood, 4.6 miles southwest of, at schoolhouse, on south side of road, 50 feet east of main forks, in hub on 4-foot oak tree; nail marked "U. S. B. M. 1235" | 1, 234.35 |
| Springwood, 5.1 miles southwest of, in northwest corner of stone foundation of house owned by C. C. Burch, on north side; aluminum tablet.... | 1, 234.070 |
| Springwood, 6.5 miles southwest of, on north side of road, 330 feet west of main forks, on ledge of limestone rock; square cut marked "U. S. B. M. 1257.5" | 1, 257.08 |
| Springwood, 7.2 miles southwest of, on north side of road, 20 feet east of stream crossing, on limestone rock; square cut marked "U. S. B. M. 1179" .. | 1, 178.51 |
| Springwood, 7.9 miles southwest of, on north side of road, 150 feet west of large branch at private crossroads; cross on top of rock marked "U. S. B. M. 1073" | 1, 072.94 |
| Fincastle, forks of road, at east edge of town, near fence; point of rock marked "1233" | 1, 232.87 |
| Fincastle, near forks, at foot of hill; point on curbstone marked "1195" ... | 1, 194.99 |

From point near Fincastle northwest along highway to point near Hebron Church.

| | |
|--|-----------|
| Fincastle, 1.1 miles northwest of, on west side of road, just south of second-class road to left, through gate, on ledge of limestone rock; square cut marked "U. S. B. M. 1225" | 1, 224.72 |
| "Grove Hill," at private road leading to; point on rock marked "1124" .. | 1, 124.61 |
| Catawba Creek; water surface | 1, 064.38 |

| | |
|--|---------------------|
| Fincastle, 1.8 miles northwest of, on south side of road, just west of main forks, at small bridge; square cut on limestone rock, tree marked "U. S. B. M. 1067"..... | Feet. 1, 066. 14 |
| Fincastle, 3.2 miles northwest of, on east side of road, 30 feet northwest of house, in hub on 2-foot oak tree; nail marked "U. S. B. M. 1232"..... | 1, 231. 63 |
| North fork; water surface marked "1200"..... | 1, 199. 21 |
| Poorhouse Hollow, at mouth of, on north side of creek, just east of second-class road, on limestone rock; square cut marked "U. S. B. M. 1256"..... | 1, 255. 521 |
| Fincastle, 4.4 miles northwest of, at mouth of "Poorhouse Hollow," 650 feet west of main forks, north of north fork of Catawba Creek, just east of second-class road, in bench of limestone rock; aluminum tablet stamped "1256" (as reset in 1913)..... | 1, 255. 345 |
| Fincastle, 5.3 miles northwest of, on north side of road, just west of forks at ford, in hub on 3-foot sycamore tree; nail marked "U. S. B. M. 1346"..... | 1, 345. 50 |
| Fincastle, 5.7 miles northwest of, at foot of mountain, on west end of south abutment of bridge over stream; chiseled square marked "U. S. B. M. 1474"..... | 1, 473. 61 |
| Fincastle, 6.2 miles northwest of, on east side of gully, in hub on 1-foot oak tree; nail marked "U. S. B. M. 1624"..... | 1, 623. 09 |
| Price's Mountain Gap, at center of road; marked "1961"..... | 1, 960. 41 |
| Fincastle, 7 miles northwest of, at Craig-Botetourt county-line crossing, at gap on Price's Mountain, on county-line rock, on south side of road; paint spot marked "U. S. B. M. 1959"..... | 1, 958. 963 |
| Fincastle, 7.6 miles northwest of, on rock on south side of road, 100 feet west of gully; square cut marked "U. S. B. M. 1662"..... | 1, 661. 44 |
| Fincastle, 7.7 miles northwest of, road at sharp turn to north; painted on rock, marked "1617"..... | 1, 617. 19 |
| Fincastle, 8.1 miles northwest of, road at turn to north; painted on rock, marked "1385"..... | 1, 385. 17 |
| Fincastle, 8.3 miles northwest of, north side of road, 50 feet east of house on south side of road, on large stone; paint spot marked "1334"..... | 1, 333. 69 |
| Fincastle, 8.9 miles northwest of, on top of hill, at house on north side of road, marked "1270"..... | 1, 270. 0 |
| Fincastle, 9.1 miles northwest of, on northwest abutment of wagon bridge; paint spot marked "1226"..... | 1, 225. 92 |
| Fincastle, 9.2 miles northwest of; bridge floor marked "1211"..... | 1, 210. 8 |
| From Eagle Rock west along Craig Valley Branch of Chesapeake & Ohio Ry. to Given. | |
| Eagle Rock, 0.2 mile west of, in northwest abutment of wagon bridge over James River; aluminum tablet stamped "934"..... | 934. 550 |
| Eagle Rock, 0.7 mile west of, on railroad bridge over James River; top of cross-ties..... | 943. 2 |
| James River; surface of water under bridge Aug. 22, 1913..... | 908. 9 |
| Bessemer, at Garges's sawmill, southwest corner of cattle guard; temporary bench mark..... | 942. 55 |
| Eagle Rock, 1.9 miles west of, west end of railroad bridge over Craig Creek, north side of track; bolt (30.2 feet above water) Aug. 22, 1913..... | 946. 92 |
| Eagle Rock, 2.9 miles west of, 0.5 mile west of road crossing, 900 feet west of milepost marked "N. C. 25, E. M. 2," south side of track, in culvert; bronze tablet stamped "984"..... | 983. 856 |
| Pinnacle, 2.2 miles east of, 0.9 mile west of milepost marked "E. M. 3, N. C. 26," north side of track, in northwest corner of culvert; aluminum tablet stamped "988" (not found in 1913)..... | 985. 412 |

| | |
|--|------------------------|
| Eagle Rock, 5.4 miles west of, 100 feet west of cut at the "Pinnacles," on northeast corner of cattle guard; bolt..... | Feet 1, 086. |
| Parr post office, 1.4 miles east of, west side of track, southwest corner of culvert; aluminum tablet stamped "1039" restamped "1036"..... | 1, 036. |
| Parr post office, 2.1 miles east of, at road crossing, northwest corner of cattle guard; bolt marked "1055"..... | 1, 052. |
| Parr post office, west side of track, 10 feet north of small creek; paint spot on rock..... | 1, 026. |
| Hipes station, west side of track, in southwest corner of culvert; aluminum tablet stamped "1025." (A Deemers bench mark; could not be found in 1913)..... | 1, 022. 556 or 1, 023. |
| Hipes station, 400 feet west of south side of track, in culvert; bronze tablet stamped "1033"..... | 1, 033. |
| Hipes station, 1.1 miles west of, railroad bridge over Craig Creek, southwest corner; bolt..... | 1, 051. |
| Old sawmill, at road crossing; top of rail..... | 1, 081. |
| Hipes station, 1.7 miles west of, northeast corner of cattle guard; bolt..... | 1, 082. |
| Schoolhouse, at crossing west of; top of rail..... | 1, 067. |
| Surber, in front of station; top of rail..... | 1, 066. |
| Surber, 300 feet south of station, west side of track, in culvert; aluminum tablet stamped "1060" restamped "1057"..... | 1, 057. |
| Surber, 1.9 miles west of, at road crossing, northeast corner of cattle guard; bolt..... | 1, 118. |
| Oriskany, at road crossing; top of rail..... | 1, 142. |
| Oriskany, 500 feet west of station, south side of track, in culvert; aluminum tablet stamped "1130" restamped "1127"..... | 1, 127. |
| Given, 0.4 mile east of, north side of track, in culvert; aluminum tablet stamped "1274"..... | 1, 274. |

From point 1.9 miles west of Eagle Rock northwest along highway to Strom, thence south to Parr.

| | |
|---|---------|
| Bessemer, 4.5 miles west of, on road to Strom post office, 25 feet west of forks, in root of tree; copper nail..... | 958. |
| Strom, post office, 300 feet east of, west side of road, in large boulder; aluminum tablet stamped "1023"..... | 1, 023. |
| East side of road, 500 feet south of house, in root of tree; nail..... | 1, 240. |

NATURAL BRIDGE QUADRANGLE.

[Latitude 37° 30'–37° 45'; longitude 79° 30'–79° 45'.]

From Buchanan northeast along Chesapeake & Ohio Ry. to Gilmore Mills.

| | |
|---|------|
| Buchanan, 3.3 miles northeast of, 200 feet east of house occupied by Charles Stinnett, in ledge of rock; aluminum tablet..... | 818. |
| NOTE.—Permission to destroy this b. m. was granted June 10, 1913. | |
| Dillon, in front of station, main track; top of north rail..... | 813. |
| Indian Rock, in southeast corner of west abutment at south side of railway bridge over Whistle Creek; aluminum tablet..... | 794. |
| Indian Rock, in front of station; top of north rail of main track..... | 795. |
| Rocky Point, in southeast corner of east abutment of railroad bridge over Roaring Run; aluminum tablet..... | 771. |
| Alpine, in front of station; top of south rail..... | 773. |
| Gilmore Mills, in front of station; top of north rail..... | 751. |

From Gibmore Mills north along highway via Natural Bridge and Longwood to Murat.

| | |
|---|----------------------|
| Natural Bridge, on north side of bridge, in rock standing in inclosure; aluminum tablet stamped "1150 Adj 1903"..... | Feet. 1, 149. 661 |
| Natural Bridge, 2.6 miles northeast of, at main road forks 1.5 miles south-west of Fancy Hill post office, in rock north of road just east of forks; aluminum tablet stamped "1231 Adj 1903"..... | 1, 231. 014 |
| Longwood, 1 mile northeast of, in fifth brick from west at southwest corner (south side) of Seceder Church, in fourth course of bricks above foundation; aluminum tablet stamped "1179 Adj 1903"..... | 1, 178. 839 |
| Longwood, 3.8 miles northeast of, 75 feet south of stream crossing, in large rock; aluminum tablet stamped "1251 Adj 1903"..... | 1, 250. 677 |
| Murat, in southeast corner of south abutment of south end of highway bridge over Buffalo Creek; aluminum tablet stamped "1021 Adj 1903" | 1, 021. 262 |

From Buchanan north along highways via Rapps Mill to Murat.

| | |
|--|-------------|
| Buchanan, 3 miles north of, on Mr. Peachin's place, in sandstone 75 feet north of house occupied by Charles Miller; aluminum tablet..... | 1, 161. 841 |
| Buchanan, 7 miles north of, at main road forks just west of Dunkard Church in rock on east side of road just north of forks; aluminum tablet stamped "1597 Adj 1903"..... | 1, 596. 574 |
| Rapps Mill, 50 feet southeast of, in front yard of James B. Rapp, in sandstone; aluminum tablet stamped "1497 Adj 1903"..... | 1, 496. 550 |
| Rapps Mill, 3.2 miles northeast of, 210 feet north of main forks, in ledge of rock east of road; aluminum tablet stamped "1277 Adj 1903"..... | 1, 277. 262 |
| Murat, 3.5 miles west of, 6.2 miles northeast of Rapps Mill, at iron wagon bridge over South Buffalo Creek, on south side at southeast corner of east abutment; aluminum tablet stamped "1150 Adj 1903"..... | 1, 149. 707 |

Up North Buffalo Creek via Oakdale and over Biggs Mountain to Dagger Springs and Gala.¹

| | |
|--|-------------|
| Oakdale, 1.5 miles southwest of, north of road, in rock 30 feet west of main road forks; aluminum tablet stamped "1307 Adj 1903"..... | 1, 308. 004 |
| Oakdale, 6 miles southwest of, at gap at head of North Buffalo and Mill creeks, in large boulder; aluminum tablet stamped "2179 Adj 1903"... | 2, 179. 680 |
| Oakdale, 9.8 miles southwest of, at crossroads, 2 miles southeast of Dagger Springs, directly north of four corners, in rock north of road; aluminum tablet stamped "1392 Adj 1903"..... | 1, 392. 463 |

Antietam quadrangle.**LOUDOUN COUNTY.**

The elevations in the following list are based on precise-level lines of the Coast and Geodetic Survey and the Baltimore & Ohio Railroad.

The leveling in Antietam quadrangle was done in 1907 by W. R. Winstead.

Elevations in Maryland appear in Bulletin 563; those in West Virginia in Bulletin 399.

¹ An arbitrary adjustment of 1 foot was made between starting point and first bench mark of this line.

ANTIETAM QUADRANGLE.

[Latitude 39° 15'-39° 30'; longitude 77° 30'-77° 45'.]

From Point of Rocks southwest along highway to Taylorstown, thence northwest to Harpers Ferry.

| | |
|--|------------------|
| Taylorstown, 0.1 mile west of post office, in center of south end of pillar at west end of iron bridge over Catoctin Creek; aluminum tablet stamped "Maryland 272 Adj"..... | Feet. 272.000 |
| Taylorstown, 2.6 miles northwest of, 50 feet east of road fork south, near short bend in road to north, 15 feet west of barn, on top of stone; chiseled square marked "479.6 U. S. B. M."..... | 479.35 |
| Lovettsville, in front face of post office at G. F. Eamich's store, east side of door, between door and window; aluminum tablet stamped "Md 507 Adj"..... | 506.800 |
| Lovettsville, 3.4 miles northwest of, 0.1 mile north of road fork, 150 feet north of second-class fork west, 1,000 feet east of house, 8 feet east of road by fence bars, in west side of large sandstone; aluminum tablet stamped "Md 471 Adj"..... | 470.629 |
| Lovettsville, 7.1 miles northwest of, 0.4 mile west of sawmill, about 0.2 mile west of old house, at spring on left of road in front of house, 12 feet north of road between road and river, in top of large native rock; aluminum tablet stamped "Adj 254"..... | 253.401 |
| Lovettsville, 8.7 miles northwest of, in north side at center of bridge over Shenandoah River at Harpers Ferry; nail marked "281"..... | 281.19 |

From point 1 mile east of Harpers Ferry south to Neersville.

| | |
|--|---------|
| Neersville, 300 feet north of road forks, 0.2 mile north of former post office, in northeast corner of schoolhouse; aluminum tablet stamped "615 Adj"..... | 614.482 |
|--|---------|

Bramwell quadrangle.

[Latitude 37° 15'-37° 30'; longitude 81° 15'-81° 30'.]

TAZEWELL COUNTY.

The elevations in the following list are based on the height of the permanent bench mark at Graham, established by precise leveling in 1909. The leveling was done by T. A. Green in 1909. Elevations in this quadrangle in West Virginia can be found in Bulletin 477.

From divide at head of Abbs Valley southwest to Smith store, thence north to State line (part of adjusted circuit).

| | |
|--|--------------------|
| Smith store, 350 feet south of forks, 75 feet east of road, 200 feet west of Mrs. W. T. Harrison's barn, on west side of running stream, in sandstone; aluminum tablet stamped "2598 Va 1909"..... | Feet. 2,597.895 |
|--|--------------------|

From State line southeast along Norfolk & Western Ry. to Graham.

| | |
|--|-----------|
| Virginia-West Virginia State line, railway crossing; top of rail..... | 2,309.4 |
| Flattop, 0.8 mile east of, on rock 40 feet east of milepost 370; chiseled square..... | 2,321.20 |
| Falls Mills, in front of station; top of rail..... | 2,330.1 |
| Falls Mills, 1.5 miles east of, 500 feet west of milepost 368, north end of east abutment of railroad bridge 840; aluminum tablet stamped "2348"..... | 2,347.640 |
| Falls Mills, 2.8 miles east of, at old sawmill, 100 feet east of road crossing on north end of west abutment of iron railroad bridge 835; chiseled square..... | 2,370.10 |
| Graham, in front of signal tower; top of rail..... | 2,386.2 |

| | |
|--|---------------------|
| Graham, at northwest corner of station platform, on granite curbing; chiseled square..... | Feet. 2, 393. 46 |
| Graham, on west side of front entrance to Bank of Graham, third step above pavement; aluminum tablet stamped "2389"..... | 2, 389. 450 |
| From State line southwest along Norfolk & Western Ry. to Pocahontas (mean of two lines). | |
| Pocahontas, in front of station; top of rail..... | 2, 318. 8 |
| Pocahontas, on west side of front entrance to Bank of Pocahontas, in first step above pavement; aluminum tablet stamped "2320 Va 1909"..... | 2, 320. 057 |
| From State line near Nemours, W. Va., southwest up Abbe Valley to point near divide (part of adjusted circuit). | |
| Nemours, 1.1 miles southwest of, east of road, 20 feet west of gate, on limestone; chiseled square marked "U. S. B. M. 2334"..... | 2, 330. 78 |
| Nemours, 1.9 miles southwest of, west of road, at top of knoll, on limestone; chiseled square marked "U. S. B. M. 2395"..... | 2, 395. 18 |
| Nemours, 2.8 miles southwest of, at road forks, 300 feet east of large red barn, 30 feet north of gate east of road, in limestone; aluminum tablet stamped "2443 Va 1909"..... | 2, 443. 501 |
| Nemours, 4 miles southwest of, 300 feet south of Mr. Browning's house, west of road, at sharp bend, on limestone ledge; chiseled square marked "U. S. B. M. 2411"..... | 2, 411. 52 |
| Nemours, 4.9 miles southwest of, at junction with main road running east, 15 feet west of telephone pole at northeast corner of road junction, on limestone; chiseled square marked "U. S. B. M. 2441"..... | 2, 441. 27 |
| Nemours, 6.4 miles southwest of, south of road, on top of hill, north of fence, in sandstone boulder; aluminum tablet stamped "2523 Va 1909"..... | 2, 522. 908 |
| Nemours, 7.5 miles southwest of, 0.3 mile southwest of J. G. Bailey's house north of road, on limestone outcrop; chiseled square marked "U. S. B. M. 2517"..... | 2, 516. 72 |
| Nemours, 8.3 miles southwest of, at junction with road running northwest through gate, point on limestone, 5 feet north of W. A. Barrett's mail box, at southeast corner of road junction; mail box marked "U. S. B. M. 2529"..... | 2, 528. 92 |
| From Smith store north to State line (part of adjusted circuit). | |
| Smith store, 1.5 miles northwest of, south of road, 50 feet west of sharp bend, on sandstone outcrop; chiseled square marked "U. S. B. M. 2601"..... | 2, 601. 26 |

Middlesboro quadrangle.

(Latitude 36° 30'–36° 45'; longitude 83° 30'–83° 45'.)

LEE COUNTY.

The elevation given below was determined by a double line of primary leveling brought from a precise-level bench mark near Mascot, Tenn., to Cumberland Gap and thence by a single spur line to Wheeler. The leveling was done by F. L. Foust in 1903. For elevations in Kentucky see Bulletin 554, and for those in Tennessee see Bulletin 441.

From Cumberland Gap east along Louisville & Nashville R. R. to Wheeler.

| | |
|--|---------------------|
| Cumberland Gap, at summit, on Kentucky-Tennessee-Virginia stone corner post; chisel point..... | Feet. 1, 648. 47 |
|--|---------------------|

Abingdon quadrangle, embracing Damascus, Glade Springs, Marion, and Mount Rogers 15' quadrangles.

[Latitude 36° 30'–37°; longitude 81° 30'–82°.

GRAYSON, RUSSELL, SMYTH, AND WASHINGTON COUNTIES.

The elevations in the following list were determined in 1908 and 1909 by J. B. Metcalfe, jr., by a single unchecked line from a point 0.3 mile northeast of Housley, Tenn., in Roan Mountain quadrangle, to Damascus, Va. Other lines are closed circuits dependent on this line. For elevations in Abingdon quadrangle in North Carolina and Tennessee see Bulletin 441.

From Damascus south along Laurel Ry. to Laurel Bloomery, thence east along highways to Little Horse Creek, thence north to point 3.1 miles northeast of Konnarock.

| | |
|--|----------------------|
| Little Horse Creek, 4.7 miles north of, near junction of Big Horse Creek and Mud Fork, near Bill Miller's house, 10 feet east of road, 20 feet north-east of forks, in ledge of rock; aluminum tablet stamped "2954"..... | Feet. 2, 953. 662 |
| Little Horse Creek, 8.5 miles north of, 8 feet east of road, 300 feet north-west of old house; cross on ledge of rock, marked "3984"..... | 3, 983. 63 |
| Little Horse Creek, 10.2 miles north of, about 0.25 mile from top of gap between Whitetop and Rogers mountains, 60 feet south of second-class road forks to southwest, 6 feet west of road; cross on ledge of rock, marked "4535"..... | 4, 534. 20 |
| Little Horse Creek, 10.2 miles north of, about 0.25 mile from top of gap between Whitetop and Rogers mountains, about 60 feet south of second-class road fork to southwest, about 7 feet west of road, in ledge of rock; aluminum tablet stamped "4535"..... | 4, 533. 831 |
| Konnarock, 6.8 miles northeast of, about halfway up mountain road over gap between Whitetop and Rogers mountains, east of road; nail in root of chestnut tree, marked "4102"..... | 4, 101. 23 |

From Damascus northwest along Virginia-Carolina Ry. to Abingdon.

| | |
|---|-------------|
| Damascus, 2.4 miles northwest of, 20 feet west of railroad, 100 feet south of milepost A 13, in ledge of limestone rock; aluminum tablet stamped "1834"..... | 1, 833. 671 |
| Baron station, about 0.5 mile southeast of, 8 feet north of railroad, 35 feet west of milepost A 9, in limestone rock; aluminum tablet stamped "1763". | 1, 762. 700 |
| Watauga, 1 mile northwest of, 10 feet west of railroad, 260 feet north of bridge 3 over creek, in ledge of rock in cut; aluminum tablet stamped "1924"..... | 1, 923. 707 |
| Abingdon, south side of new building being put up by Mr. Sumner, facing on Main Street, and 200 feet northeast of Confederate monument, about 3.5 feet from ground and 2 feet from southeast corner of building, in brick wall; aluminum tablet stamped "2096"..... | 2, 095. 386 |

From Abingdon east along Norfolk & Western Ry. to Marion.

| | |
|--|-------------|
| Abingdon, 3.8 miles east of, 10 feet north of railroad, 12 feet east of milepost "B 19 N 389," 50 feet east of cross roads, in rock; aluminum tablet stamped "2167"..... | 2, 166. 715 |
| Meadow View, 1,030 feet west of station, 12 feet north of railroad, on north end of culvert over small creek, in rock; aluminum tablet stamped "2110"..... | 2, 108. 793 |

| | |
|--|----------------------|
| Emory, 2.2 miles east of, 20 feet south of railroad, southeast corner of stone culvert, 40 feet north of road, running parallel to railroad, 1,450 feet east of milepost "B 26 N 382," in top of rock; aluminum tablet stamped "2083" | Feet. 2, 082. 674 |
| Emory, 6.6 miles east of, 10 feet south of railroad, on southwest corner of culvert, 1,950 feet east of milepost "B 31 N 377," in rock; aluminum tablet stamped "2047" | 2, 046. 533 |
| Chilhowie, 0.8 mile east of, 6 feet south of railroad, on southwest abutment of railroad bridge over Middle Fork of Holston River, in top face; aluminum tablet stamped "1950" | 1, 949. 456 |
| Chilhowie, 2 miles east of, 10 feet east of bridge over Middle Fork of Holston River, on joint of south rail of railroad; marked "1964" | 1, 963. 61 |
| Chilhowie, 3.5 miles east of, 7 feet north of railroad, about 1 mile east of Sevenmile Ford, on northeast corner of abutment to trestle over Middle Fork of Holston River and to arch over road, in top face; aluminum tablet stamped "2013" | 2, 012. 162 |
| Marion, 8 feet north of railroad, about 0.25 mile west of station, on top face of abutment to bridge over Middle Fork of Holston River; cross on top of stone marked "2126.7" | 2, 126. 04 |
| Marion, on west side of station, 1 foot south of northwest corner and 4 feet from ground, in brick wall; aluminum tablet stamped "2145" | 2, 144. 624 |
| From Damascus east along Virginia-Carolina Ry. to point 3.1 miles northeast of Konnarock. | |
| Damascus, 0.2 mile west of station, south side of Main Street, in east face of brick wall, 2.7 feet south of northeast corner of Bank of Damascus, 3.4 feet from ground; aluminum tablet stamped "1929" | 1, 928. 344 |
| Taylor's Valley, 1,360 feet northwest of station, 7 feet east of railroad, in ledge of rock in cut; aluminum tablet stamped "2366" | 2, 365. 210 |
| Konnarock, 3,200 feet southwest of station, 10 feet north of railroad, in ledge of rock; aluminum tablet stamped "2896" | 2, 895. 695 |
| Konnarock, 3.1 miles northeast of, 12 feet north of road forks, on road to Chilhowie; nail in root of 4-foot red-oak tree, marked "3138.5" | 3, 137. 87 |
| From point 3.1 miles northeast of Konnarock north along highways to Chilhowie. | |
| Konnarock, 3.7 miles northeast of, on road to Chilhowie, east side of road, south side of mountain; cross on ledge of rock, marked "3187.3" | 3, 186. 61 |
| Konnarock, 5 miles northeast of, on road to Chilhowie, on top of Skulls Gap, east side of road; nail in root of 2.5-foot white-oak tree, marked "3659.8" .. | 3, 659. 16 |
| Konnarock, 7 miles north of, on north side of mountain, east side of road; nail in root of 1.5-foot red-oak tree, marked "2975" | 2, 973. 99 |
| Konnarock, 9.4 miles north of, on road to Chilhowie, 35 feet east of road, 50 feet south of large spring with house over it, in limestone rock projecting from foot of hill; aluminum tablet stamped "2240" | 2, 239. 212 |
| Konnarock, 12.2 miles north of, on road to Chilhowie, 10 feet east of road, 250 feet south of large white house on east side of road and red barn on west side, in ledge of limestone rock; aluminum tablet stamped "2222" .. | 2, 220. 999 |
| Konnarock, 13.7 miles north of, on road to Chilhowie, 30 feet east of road forks, 2 feet above level of road; cross on ledge of rock, marked "2097.2" .. | 2, 096. 60 |
| From Marion north along highways to Chatham Hill, thence west to Hayter Gap, thence south to Abingdon. | |
| Marion, 2.5 miles north of, on road to Chatham Hill, in forks of road to west, near Mr. Copenhaver's house; cross on ledge of rock, marked "2202" | 2, 201. 43 |
| Marion, 5.2 miles north of, on road to Chatham Hill, north side of mountain road, about 0.5 mile from bottom of same; cross on rock, marked "2433" | 2, 432. 25 |

| | |
|---|---------------------|
| Marion, 6.2 miles north of, on road to Chatham Hill, east side of mountain road, just opposite old sawmill; cross on ledge of rock, marked "2834" .. | Feet. 2, 833. 53 |
| Marion, 7.8 miles north of, on road to Chatham Hill, 6 feet east of road, 300 feet north of point where road crosses top of mountain, in ledge of rock; aluminum tablet stamped "3454" | 3, 453. 478 |
| Marion, 10.5 miles north of, on road to Chatham Hill, 3 feet west of road and 300 feet west of large barn; cross on ledge of rock, marked "2392.4" .. | 2, 391. 78 |
| Chatham Hill, 1 mile west of, 250 feet south of road forks, 60 feet west of White Oak Branch, 6 feet west of road, in ledge of limestone; aluminum tablet stamped "2050" | 2, 049. 128 |
| Chatham Hill, 2.7 miles west of, on road to Saltville, at top of hill, 6 feet west of road, 10 feet north of gate to field; cross on ledge of rock, marked "2330.4" | 2, 329. 76 |
| Chatham Hill, 6.9 miles west of, 220 feet west of road forks, 200 feet west of point where Cove Creek crosses road, about 100 feet southeast of Cove Creek schoolhouse, 6 feet north of road, 4 feet above level of road, in ledge of limestone; aluminum tablet stamped "1810" | 1, 808. 841 |
| Broad Ford, 1.2 miles west of, on road to Saltville, 6 feet north of road, 3 feet above level of road, in cut along North Fork of Holston River, in slanting ledge of rock; aluminum tablet stamped "1758" | 1, 757. 782 |
| Saltville, 3.9 miles east of, on road to Saltville, 175 feet west of road forks, about 0.5 mile east of Southern Gypsum Works, 3 feet east of road; cross on ledge of rock, marked "1741.6" | 1, 740. 99 |
| Saltville, 0.6 mile east of, 200 feet north of store at Cedar Branch, 8 feet north of road, on northwest abutment to bridge over North Fork of Holston River, in top face; aluminum tablet stamped "1714" | 1, 713. 111 |
| Saltville, 2.3 miles west of, on road to Hayter Gap, 7 feet south of road forks and 45 feet northeast of house; cross on large rock, marked "1928" | 1, 925. 34 |
| Saltville, 5.1 miles west of, on road to Hayter Gap, 100 feet west of bridge over Tumbling Creek, in road forks north; cross on rock, marked "1765" .. | 1, 764. 09 |
| Saltville, 5.8 miles west of, on road to Hayter Gap, 30 feet north of road forks south; cross on sandstone, marked "1733" | 1, 732. 54 |
| Saltville, 5.8 miles west of, on road to Hayter Gap, 575 feet west of road forks south, about 0.8 mile southwest of Hazel Springs, 75 feet east of where creek crosses road, 6 feet north of road, in sandstone ledge; aluminum tablet stamped "1740" | 1, 739. 913 |
| Saltville, 9.3 miles east of, on road to Hayter Gap, 100 feet north of forks north where road goes over Hayter Gap, 16 feet west of road, in sandstone ledge; aluminum tablet stamped "1656" | 1, 655. 950 |
| Hayter Gap, 1 mile south of, on road to Abingdon, 10 feet northwest of road forks east, at east end of bridge over Wolf Creek, 150 feet northeast of junction of North Fork of Holston River and Wolf Creek; cross on rock, marked "1532.4" | 1, 531. 78 |
| Hayter Gap, 1 mile south of, on road to Abingdon, 100 feet northeast of bridge over Wolf Creek, 75 feet northeast of road forks east, 10 feet east of road, in ledge of rock; aluminum tablet stamped "1536" | 1, 535. 202 |
| Hayter Gap, 4.7 miles south of, on road to Abingdon, 6 feet north of road forks south, near house; cross on ledge of rock, marked "1498" | 1, 497. 32 |
| Hayter Gap, 6 miles south of, on road to Abingdon, 7 feet east of road, 50 feet south of store, on north bank of Tool Creek; cross on ledge of rock, marked "1500" | 1, 499. 62 |
| Hayter Gap, 6 miles south of, on road to Abingdon, 75 feet south of Baily's store on Tool Creek, 15 feet east of where road crosses Tool Creek, in ledge of rock; aluminum tablet stamped "1503" | 1, 502. 043 |

Hayter Gap, 9.8 miles south of, 1 mile southwest of White's mill, on road to Abingdon, 20 feet northwest of second-class road west, 300 feet south of creek crossing, in ledge of rock; aluminum tablet stamped "2008" Feet. 2,007.636

From Hayter Gap northeast along highways to Belfast Mills (spur line).

Hayter Gap, 2.4 miles north of, on top of Clinch Mountain, 10 feet west of road, in sandstone ledge; aluminum tablet stamped "3012" 3,010.920
 Hayter Gap, 4.6 miles north of, northeast of road forks east, 75 feet west of point where Sloop Creek crosses road, about 0.25 mile south of Rockdell; cross on rock, marked "2188.3" 2,187.67
 Hayter Gap, 6.1 miles north of, about 300 feet south of road west to Elk Garden, 6 feet east of road, in limestone ledge; aluminum tablet stamped "2131" 2,130.707
 Old Rosedale, about 400 yards east of, 150 feet west of road north to Honaker, 8 feet north of road, in limestone ledge; aluminum tablet stamped "2281" 2,280.669
 Rosedale, about 2.5 miles east of, 30 feet southwest of road forks north, south side of road; cross on rock, marked "2330.6" 2,330.03
 Rosedale, 2.8 miles east of, about 0.25 mile west of John Vessel's residence, 100 feet south of road forks, 10 feet east of road, in sandstone; aluminum tablet stamped "2314" 2,313.810
 Belfast Mills, 20 feet west of forks, 35 feet east of blacksmith shop; cross painted on rock, marked "2280" 2,279.15
 Belfast Mills, 1 mile east of, 75 feet south of road, 300 feet northeast of C. W. Grant's residence, 6 feet north of branch of Indian Creek, in limestone ledge; aluminum tablet stamped "2293" 2,292.530

Big Stone Gap, Bramwell, Bucu, Burkes Garden, Clintwood, Coeburn, Glade Springs, Hagan, Hansonville, Middlesboro, Nolansburg, Pound, Pounding Mill, Regina, Richlands, Sneedville, and Wise quadrangles.

DICKENSON, LEE, RUSSELL, TAZEVELL, AND WISE COUNTIES.

The following elevations were determined by primary leveling, using prism level and yard rod. The line was double run from Graham to Cumberland Gap. The circuit from Norton via Pound, Clintwood, and Dante, to a point near St. Paul was single. The elevations, which were based on the 1903 adjustment, are unchanged by the 1907 or 1912 adjustments and accord with those in bulletins 434 and 441.

The leveling was done by L. F. Biggs in 1912. Additional leveling with Y level and New York rod was done in 1912 in Clintwood quadrangle by C. W. Arnold, in Wise quadrangle by J. B. Metcalfe, in Pound quadrangle by Arnold, Metcalfe, and H. S. Senseney, and in 1913 by Senseney and S. R. Archer; in Bucu, Clintwood, Coeburn, and Regina quadrangles in 1913 by Senseney.

The work was done in cooperation with the State.

BIG STONE GAP QUADRANGLE.

[Latitude 36° 45'-37°; longitude 82° 45'-83°.]

From milepost N 7 along Louisville & Nashville R. R. to point 3 miles east of Pennington.

Milepost N 7; spike in base of, marked "1773" Feet. 1,773.24
 Milepost N 8; spike in base of, marked "1717" 1,717.27

| | |
|--|---------------------|
| Appalachia, 1.2 miles east of, 400 feet west of milepost N 9; in large rock 15 feet south of track; aluminum tablet stamped "1669 B 35 1912"..... | Feet. 1, 669.206 |
| Milepost N 10, 900 feet east of; spike in west support of switch stand, marked "1655;" aluminum tag placed near spike..... | 1, 654.97 |
| Milepost N 11, opposite; spike in base of section post, marked "1635".... | 1, 635.46 |
| Big Stone Gap, 2 miles east of station, 300 feet west of milepost N 12, in north end of east abutment of overhead railroad bridge at point where railroad crosses river; aluminum tablet stamped "1580"..... | 1, 580.297 |
| Milepost N 13; spike in base, marked "1526"..... | 1, 525.80 |
| Big Stone Gap, in front of station; top of rail..... | 1, 588.5 |
| Big Stone Gap, 1 mile west of station, 400 feet east of milepost N 15, in cut, 15 feet south of track, in large rock; aluminum tablet stamped "1463 B 37 1912"..... | 1, 462.831 |
| Milepost N 16; spike in base, marked "1459"..... | 1, 458.56 |
| Milepost N 17; spike in base, marked "1469"..... | 1, 469.14 |
| Big Stone Gap, 4 miles west of station, 75 feet east of milepost N 18, 20 feet north of track, in rock; aluminum tablet stamped "1460 B 38 1912".... | 1, 459.966 |
| Milepost N 19; spike in base, marked "1488"..... | 1, 487.97 |
| Milepost N 20; spike in base, marked "1470"..... | 1, 469.92 |
| Ohlinger, in front of station; top of rail..... | 1, 502.0 |
| Ohlinger, 2 miles west of station, 375 feet west of milepost N 21, 10 feet north of track, in rock cut; aluminum tablet stamped "1434 B 39 1912"..... | 1, 434.055 |
| Milepost N 22; spike in base, marked "1417"..... | 1, 416.73 |
| Milepost N 23; spike in base, marked "1416"..... | 1, 415.94 |
| Dryden, 1 mile east of, 350 feet west of milepost N 24, in rock 10 feet south of track; aluminum tablet stamped "1435 B 40 1912"..... | 1, 434.118 |
| Milepost N 25, opposite Dryden station; spike in base of milepost, marked "1440"..... | 1, 440.37 |
| Milepost N 26; spike in base, marked "1480"..... | 1, 480.13 |
| Pennington, 3 miles east of, 300 feet west of milepost N 27, 10 feet north of track, in rock cut; aluminum tablet stamped "1483 B 41 1912"..... | 1, 483.282 |

BRAMWELL QUADRANGLE.¹

[Latitude 37° 15'–37° 30'; longitude 81° 15'–81° 30']

From Graham along Norfolk & Western Ry. to Furnace.

| | |
|---|------------|
| Graham, on west side of front entrance to Bank of Graham; aluminum tablet stamped "2389"..... | 2, 389.450 |
| Furnace signboard, in second telegraph pole west of; spike, aluminum tag stamped "2391"..... | 2, 390.61 |

BUCU QUADRANGLE.

[Latitude 37°–37° 15'; longitude 82°–82° 15']

From milepost N 45 along Norfolk & Western Ry. to milepost N 43.

| | |
|--|------------|
| Milepost N 44; spike in base, marked "1768"..... | 1, 767.82 |
| Honaker, 2.5 miles west of, in limestone 20 feet north of track and on east side of creek; aluminum tablet stamped "1719 B 18 1912"..... | 1, 718.625 |
| Milepost N 43; spike in base, marked "1685"..... | 1, 684.64 |

¹ For elevations in West Virginia in this quadrangle see Bulletin 477.

From Colley south 2 miles, thence west along highway to Street schoolhouse, thence north to Hanger, thence west to a point 1.1 miles west of Vioey.

| | |
|--|---------------------|
| Colley post office, opposite, at foot of drain, in mulberry tree; copper nail with washer, painted "U. S. B. M. 1299"..... | Feet. 1, 298. 50 |
| Colley post office, about 1.5 miles south of, east side of road, in ledge; aluminum tablet stamped "1304 Va"..... | 1, 304. 241 |
| Colley post office, about 2 miles south of, 15 feet south of Priest Fork, west side of road, in large stump; copper nail with washer, painted "U. S. B. M. 1311"..... | 1, 310. 99 |
| Priest Fork, about 1.2 miles east of mouth of, on south side of road to Abners Gap, in root of tree; copper nail with washer, painted "U. S. B. M. 1452" .. | 1, 452. 11 |
| Abners Gap, summit of, center of road; elevation painted "U. S. 1582" ... | 1, 582. 1 |
| Honaker Lumber Co.'s log road, at switch; top of rail..... | 1, 496. 6 |
| Bee post office, about 0.1 mile east of, 75 feet west of switch, north side of track, in ledge; aluminum tablet stamped "1482 Va"..... | 1, 481. 737 |
| Bee post office, about 1.1 miles east of, north side of track, on Russell Fork, in root of tree; copper nail with washer, painted "U. S. B. M. 1424" | 1, 424. 00 |
| Deel post office, about 300 feet east of, 50 feet west of switch, in root of chestnut tree; copper nail with washer, painted "U. S. B. M. 1432" ... | 1, 431. 63 |
| Hurricane schoolhouse, about 300 feet south of, opposite Jackson's store, 15 feet west of footbridge over Hurricane Creek, in ledge; aluminum tablet stamped "1457 Va"..... | 1, 456. 446 |
| Forks of Hurricane, 20 feet east of road crossing, south side of road, in root of apple tree; copper nail with washer, painted "U. S. B. M. 1492" | 1, 492. 18 |
| Forks of Hurricane, about 1.2 miles east of, 300 feet south of Sam Presley's house, west side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1548" | 1, 547. 47 |
| Presley schoolhouse, about 600 feet west of, 15 feet south of road, in ledge; aluminum tablet stamped "1609 Va"..... | 1, 608. 571 |
| Presley schoolhouse, about 1.2 miles east of, south side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1652" | 1, 651. 49 |
| Presley schoolhouse, about 2.4 miles east of, about 500 feet east of Keene's store, south side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1705" | 1, 704. 78 |
| Presley schoolhouse, about 3 miles east of, about 150 feet west of sharp bend in road, at foot of Fletcher's Ridge, north side of road, in ledge; aluminum tablet stamped "1723 Va"..... | 1, 722. 682 |
| Fletcher's store, center of road opposite; elevation painted "U. S. B. M. 2290" | 2, 290. 2 |
| Indian Grave Gap, about 1 mile south of, at fork in road, in root of tree; copper nail with washer, painted "U. S. B. M. 2450" | 2, 449. 68 |
| Indian Grave Gap, 25 feet north of fork in road, west side of road, on ledge; chiseled square painted "U. S. B. M. 2069" | 2, 068. 80 |
| Street schoolhouse, 20 feet northeast of doorway, in rock; aluminum tablet stamped "1667 Va" | 1, 666. 444 |
| Street schoolhouse, about 1.1 miles north of, 100 feet north of ford, west side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1601" | 1, 600. 89 |
| Skeggs post office, about 1 mile south of, west side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1559" | 1, 558. 29 |
| Skeggs post office, center of road in front of; elevation painted "U. S. 1513" .. | 1, 512. 7 |
| Skeggs post office, about 1 mile north of, 175 feet south of Harvey Childress's house, 25 feet south of footbridge over Garden Fork, in ledge; aluminum tablet stamped "1440 Va" | 1, 439. 325 |

| | |
|---|---------------------|
| Skeggs post office, about 2.5 miles north of, east side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1368" | Feet. 1, 368. 13 |
| Skeggs post office, about 3.5 miles north of, east side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1342" | 1, 342. 03 |
| Hanger post office, about 500 feet south of, on south bank of Levisa River, opposite private-road crossing, in ledge; aluminum tablet stamped "1300 Va" | 1, 300. 143 |
| Hanger post office, about 1.3 miles west of, north side of road, on ledge; chiseled square painted "U. S. B. M. 1259" | 1, 258. 63 |
| Hanger post office, about 2.7 miles west of, north side of road, on ledge; chiseled square painted "U. S. B. M. 1252" | 1, 252. 06 |
| Hanger post office, about 3.4 miles west of, 400 feet west of Jim Nicholl's house, south side of road, in ledge; aluminum tablet stamped "1187 Va" .. | 1, 187. 110 |
| Van Sant post office, about 2.9 miles east of, north side of road, on ledge; chiseled square painted "U. S. B. M. 1157" | 1, 156. 86 |
| Van Sant post office, about 1.8 miles east of, north side of road, on ledge; chiseled square painted "U. S. B. M. 1138" | 1, 137. 28 |
| Ratliff Chapel, in front of, in center of road; elevation painted "U. S. 1188" .. | 1, 188 |
| Van Sant post office, about 350 feet south of, west side of Prater Creek, in ledge; aluminum tablet stamped "1114 Va" | 1, 113. 876 |
| Van Sant post office, about 0.8 mile south of, 20 feet north of fork in road, east side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1158" | 1, 157. 24 |
| Van Sant post office, about 1.8 miles south of, 25 feet north of fork in road, east side of road, on ledge; chiseled square painted "U. S. B. M. 1237" .. | 1, 236. 57 |
| Van Sant post office, about 2.7 miles south of, about 400 feet east of Stillner's house, south side of road, in ledge; aluminum tablet stamped "1449 Va" | 1, 448. 724 |
| War Fork Gap, summit of, 15 feet north of road, in root of tree; nail painted "U. S. B. M. 1883" | 1, 882. 57 |
| War Fork Gap, about 1.4 miles west of, south side of road, in root of beech tree; copper nail with washer, painted "U. S. B. M. 1665" | 1, 664. 82 |
| War Fork Gap, about 2.1 miles west of, south side of road, at edge of creek, in ledge; aluminum tablet stamped "1575 Va" | 1, 574. 712 |
| Prater post office, about 0.25 mile west of, 8 feet south of road, on bank of Russell Prater Creek, on ledge; chiseled square painted "U. S. B. M. 1466" | 1, 465. 28 |
| Prater post office, about 1.4 miles west of, north side of road, in stump; copper nail with washer, painted "U. S. B. M. 1482" | 1, 481. 24 |
| Vicey post office, 200 feet east of, 20 feet north of road, in ledge; aluminum tablet stamped "1433 Va" | 1, 432. 156 |
| Vicey post office, about 1.1 miles west of, 12 feet south of road, in root of beech tree; copper nail with washer, painted "U. S. B. M. 1443" | 1, 442. 34 |
| From point 2 miles south of Colley south along highway to Bucu (spur leveled twice). | |
| Colley post office, about 3.4 miles south of, east side of road, in root of beech tree; copper nail with washer, painted "U. S. B. M. 1359" | 1, 359. 32 |
| Tiny post office, about 0.25 mile north of, 75 feet north of fork in road, east side of road, in ledge; aluminum tablet stamped "1438 Va" | 1, 437. 976 |
| Tiny, opposite old post-office building, in center of road | 1, 423. 8 |
| Tiny post office, about 1.2 miles south of, west side of road, in stump; copper nail with washer, painted "U. S. B. M. 1454" | 1, 454. 14 |
| Bucu post office, about 0.7 mile north of, east side of road, on ledge; chiseled square painted "U. S. B. M. 1581" | 1, 580. 56 |
| Bucu post office, about 0.25 mile north of, east side of road, in ledge; aluminum tablet stamped "1631 Va" | 1, 630. 568 |

BURKES GARDEN QUADRANGLE.

[Latitude 37°-37° 15'; longitude 81° 15'-81° 30'.]

From milepost N 96 along Norfolk & Western Ry. to milepost N 82.

| | Feet. |
|---|-----------|
| Milepost N 98; spike in base, aluminum tag marked "2405"..... | 2,405.12 |
| Milepost N 97; spike in base, aluminum tag marked "2433"..... | 2,432.50 |
| St. Clair, in front of station; top of rail..... | 2,446.3 |
| St. Clair, 0.5 mile west of station, 200 feet east of milepost 96, 20 feet north of track; aluminum tablet stamped "1 2468"..... | 2,467.777 |
| Milepost N 96; spike in base of, aluminum tag stamped "2508"..... | 2,508.26 |
| Milepost N 94; spike in base, aluminum tag stamped "2556"..... | 2,555.95 |
| Bailey, 270 feet east of station, 480 feet west of milepost N 93, 15 feet north of track, in rock; aluminum tablet stamped "2614 2"..... | 2,613.94 |
| Bailey, in front of station; top of rail..... | 2,609.1 |
| Milepost N 92; spike in base, aluminum tag stamped "2650"..... | 2,649.98 |
| Milepost N 91; spike in base, aluminum tag stamped "2699"..... | 2,698.80 |
| Tip Top, in front of station; top of rail..... | 2,748.2 |
| Tip Top, 850 feet west of, 20 feet south of track, in boulder; aluminum tablet stamped "2757 3 1912"..... | 2,756.789 |
| Milepost N 89; spike in base, aluminum tag stamped "2727"..... | 2,727.39 |
| Milepost N 88; spike in base, aluminum tag stamped "2672"..... | 2,671.77 |
| Wittens Mill, 1.5 miles east of station, 0.2 mile west of milepost N 87, 10 feet south of railroad, in ledge; aluminum tablet stamped "2611 4 1912"..... | 2,610.500 |
| Milepost N 86; spike in base, aluminum tag stamped "2571"..... | 2,571.25 |
| Wittens Mill, in front of station; top of rail..... | 2,536.8 |
| Milepost N 85; spike in base, aluminum tag stamped "2515"..... | 2,515.44 |
| Five Oaks, in front of station; top of rail marked "2467"..... | 2,472.5 |
| Tazewell, 3 miles east of, 700 feet west of Five Oaks station, 20 feet north of track at milepost N 84, in rock; aluminum tablet stamped "2467 5 1912 B"..... | 2,467.151 |
| Milepost N 83; spike in base, aluminum tag stamped "2411"..... | 2,411.37 |
| Milepost N 82; spike in base, aluminum tag stamped "2391"..... | 2,391.03 |

CLINTWOOD QUADRANGLE.

[Latitude 37°-37° 15'; longitude 82° 15'-82° 30'.]

From point 3 miles west of Clintwood east to point 1 mile north of Dante.

| | |
|--|-----------|
| Clintwood, 2 miles west of, at junction of Coburn and Pound roads, on culvert on west edge of road; chisel point marked "1613 U. S."..... | 1,613.11 |
| Clintwood, on concrete stoop 15 feet west of door to courthouse; aluminum tablet stamped "1784 B 8 1912"..... | 1,784.032 |
| Clintwood, 0.7 mile southeast of, west edge of road at summit of hill; 2½-foot oak tree, scribed "1972 U. S."..... | 1,971.76 |
| Clintwood, 1.1 miles southeast of, at junction of roads; 4-foot chestnut tree, scribed "1829 U. S."..... | 1,828.88 |
| Clintwood, 2 miles southeast of, south edge of road; spike in base of 2½-foot white-oak tree, scribed "1547 U. S."..... | 1,546.92 |
| Clintwood, 2.6 miles southeast of, 50 feet west of Cranesnest River at ford, in slate ledge; aluminum tablet stamped "1440 B 9 1912"..... | 1,439.862 |
| Cranesnest Ford, 1.3 miles southeast of, south edge of road; spike in base of 1½-foot hickory tree, scribed "1622 U. S."..... | 1,621.24 |
| Summit of ridge between Cranesnest and McClure rivers, north edge of road, 100 feet west of top, in boulder; aluminum tablet stamped "1925 B 10 1912"..... | 1,924.764 |

| | |
|---|-----------|
| Clintwood, 1.5 miles southeast of, 60 feet west of ford, 60 feet west of forks of road, south bank of Machine River; copper nail in root of 24-foot spruce tree, stamped and painted "1437 U. S." | 1,436.42 |
| Clintwood, 1.5 miles south of, west edge of road, at base of oak tree; chisel point in bowl of scribed in tree "1465 U. S." | 1,464.69 |
| Clintwood, 1.5 miles south of, east edge of road, at north end of flat, in boulder; aluminum tablet stamped "1486 B 11 1912" | 1,485.965 |
| Clintwood, 40 feet north of post office, north edge of road; chisel point on boulder marked "1500 U. S." | 1,499.45 |
| Nora, 1.6 miles south of, 180 feet east of road, in boulder; aluminum tablet stamped "1505 B 12 1912" | 1,505.068 |
| Nora, 1.1 mile east of, west edge of road; copper nail in base of 3-foot spruce tree scribed "1520 U. S." | 1,519.90 |
| Nora, 1.1 miles southeast of, west edge of road; chisel point on highest part of large boulder marked "1531 U. S." | 1,551.00 |
| Nora, 1.8 miles southeast of, 90 feet south of mouth of Honey Creek, east edge of road, in boulder; aluminum tablet stamped "1616 B 13 1912" | 1,615.936 |
| Nora, 4.7 miles south of, 100 feet south of creek forks, west edge of road; copper nail in base of 24-foot oak tree, scribed "1654 U. S." | 1,653.83 |
| Nora, 1.4 miles south of, east edge of road, at point where road leaves creek; copper nail in spruce tree, scribed "1727 U. S." | 1,726.84 |
| Nora, 3.9 miles south of, east edge of road, near east end of tunnel; copper nail in large white-oak stump, scribed "1877 U. S." | 1,876.47 |
| Trammel Gap, 1.5 miles north of, 100 feet south of summit of Trammel Gap, east edge of road; chisel point on boulder, marked "2550 U. S." | 2,550.06 |
| Trammel Gap, 500 feet south of, south edge of road at switchback, in large boulder; aluminum tablet stamped "2507 B 14 1912" | 2,506.588 |
| Trammel, 1 mile north of, south edge of road; copper nail in base of 1-foot black-oak tree, scribed "2143 U. S." | 2,192.43 |

From Clintwood northeast along highway to Haystack.

| | |
|---|-----------|
| Clintwood, in, on east slope of greenhouse, 15 feet west of door; aluminum tablet stamped "1784 B 8 1-12" | 1,784.032 |
| Clintwood, 1.7 miles northeast of, 700 feet south of stream crossing, west side of road; chiseled square on rock ledge, marked "B. M. 1718" | 1,717.43 |
| Clintwood, 2.3 miles northeast of, south of road; chiseled square on rock boulder, marked "B. M. 1809" | 1,809.06 |
| Clintwood, 3.2 miles northeast of, 200 feet south of stream crossing, 40 feet south of road, in rock ledge; bronze tablet stamped "1801 Va. 1912" | 1,800.615 |
| Clintwood, 3.4 miles northeast of, 50 feet northeast of road forks; nail in root of black-oak tree, marked "B. M. 1870" | 1,869.65 |
| Clintwood, 4.9 miles northeast of, 25 feet northeast of road forks; nail in root of red-oak tree, marked "B. M. 1904" | 1,994.12 |
| Clintwood, 5.6 miles northeast of, 500 feet east of house, south of road, in outcrop of rock; aluminum tablet stamped "1789 Va. 1912" | 1,788.740 |
| Clintwood, 6.6 miles northeast of, 30 feet west of house, 100 feet north of road forks; chiseled square on outcrop rock, marked "B. M. 1856" | 1,855.18 |
| Tandy, 1 mile northeast of, 100 feet west of Cranes Nest River, at road crossing, in boulder; aluminum tablet stamped "1304 Va. 1912" | 1,303.947 |
| Tandy, 1.7 miles northeast of, north of road; chiseled square on rock ledge, marked "B. M. 1577" | 1,576.45 |
| Tandy, 3.1 miles northeast of, 0.1 mile east of Watson Davis's house, south of road; nail in root of poplar tree, marked "B. M. 1820" | 1,819.31 |
| Tandy, 3.7 miles northeast of, 140 feet north of house north of road; chiseled square on outcrop ledge, marked "B. M. 1551" | 1,550.73 |

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|--|----------------------|
| Tandy, 4.2 miles northeast of, 100 feet northeast of Mount Olive Church, in triangle at road forks, in large boulder; aluminum tablet stamped "1822 Va. 1912"..... | Feet. 1, 821. 170 |
| Tandy, 5.3 miles northeast of, 20 feet west of road forks; nail in root of large white-oak tree, marked "B. M. 1821"..... | 1, 820. 24 |
| Haysi, 50 feet east of; chiseled square on outcrop, marked "B. M. 1522"..... | 1, 521. 46 |
| Haysi, 0.4 mile east of, north of road, in rock ledge; aluminum tablet stamped "1381 Va. 1912"..... | 1, 380. 432 |
| Haysi, 0.7 mile east of, 500 feet north of road crossing of McClures River, 0.5 mile west of Mart; cut in base of hemlock tree, marked "B. M. 1288.58" (Carolina, Clinchfield & Ohio Ry. b. m.)..... | 1, 289. 400 |

At point 2 miles north of Haysi and at Lonesome Branch (set from Carolina, Clinchfield & Ohio Ry. bench marks).

| | |
|--|-------------|
| Carolina, Clinchfield & Ohio Ry. b. m., station 135, R. 581, residency No. 2, White Oak..... | 1, 234. 07 |
| Haysi, about 2.25 miles north of, 400 feet north of north end of railroad bridge, on bank of river, in ledge; bronze tablet not stamped..... | 1, 220. 658 |
| Carolina, Clinchfield & Ohio Ry. b. m., 70 feet R. 460+50 White Oak, residency No. 2, No. 16 b. m. in list of Elkhorn extension..... | 1, 178. 67 |
| Lonesome Branch, cement culvert over, east side of; bronze tablet not stamped..... | 1, 193. 160 |

From Haysi southeast along highway to Colley.

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|--|-------------|
| Haysi, 0.4 mile east of, north side of road, in rock ledge; aluminum tablet stamped "1381 Va. 1912"..... | 1, 380. 432 |
| Haysi, about 1 mile east of, about 500 feet east of junction of Russell and Prater creeks, 6 feet east of Prater, on bank, in stump; copper nail with washer, painted "U. S. B. M. 1262"..... | 1, 262. 34 |
| Sand Lick (Birchleaf post office), about 1 mile northwest of, north side of road down Russells Fork, in root of tree; copper nail with washer, painted "U. S. B. M. 1270"..... | 1, 269. 61 |
| Sand Lick, at bend in road, opposite Jackson's store, east side of road, in sandstone ledge; aluminum tablet stamped "1287 Va"..... | 1, 287. 126 |
| Sand Lick, about 1.6 miles east of, 60 feet below wire footbridge at junction of Russell and Frying Pan creeks, in root of large chestnut tree; copper nail with washer, painted "U. S. B. M. 1280"..... | 1, 280. 09 |
| Colley post office, opposite, at foot of drain, in mulberry tree; copper nail with washer, painted "U. S. B. M. 1299"..... | 1, 298. 50 |
| Colley post office, about 1.5 miles south of, east side of road, in ledge; aluminum tablet stamped "1304 Va."..... | 1, 304. 241 |
| Colley post office, about 2 miles south of, 15 feet south of Priest Fork, west side of road, in large stump; copper nail with washer, painted "U. S. B. M. 1311"..... | 1, 310. 99 |

From point near Vicoy southwest along highway to Haysi.

| | |
|--|-------------|
| Vicoy post office, about 2.3 miles west of, south side of road, in root of tree; copper nail with washer, painted "U. S. B. M. 1387"..... | 1, 386. 70 |
| Mart post office, about 1.6 miles east of, 100 feet west of Doe Branch, north side of road, in ledge; aluminum tablet stamped "1377 Va"..... | 1, 376. 434 |
| Mart post office, about 0.5 mile east of, 60 feet south of fork in road, in stump; copper nail with washer, painted "U. S. B. M. 1353"..... | 1, 352. 00 |
| Mart post office, in front of, center of road; elevation painted "U. S. 1285"..... | 1, 285. |

From point 1.7 miles north of Fullers Gap north along highway to point 2 miles west of Clintwood.

| | |
|--|-------------------|
| Fullers Gap, about 1.7 miles north of, east side of road, on boulder; chiseled square..... | Feet. 1,925.63 |
| Tracys Fork, center of bridge over, painted erroneously "1626 W-8"..... | 1,735.7 |
| Fullers Gap, about 2.8 miles north of, about 600 feet north of iron bridge over Tracys Fork, east side of road, in culvert; bronze tablet stamped "1616 Va" (stamped erroneously)..... | 1,726.311 |
| Culvert at road east, painted erroneously "1584"..... | 1,694.2 |
| Steeles Fork, bridge over, 11 feet above water, floor of, painted erroneously "1525"..... | 1,637.5 |
| Carter's store, about 1.3 miles north of, west side of road, on culvert; chiseled square, painted erroneously "1454"..... | 1,563.46 |
| Lyons Fork, at road up, painted erroneously "1432"..... | 1,541.9 |
| Intersection of Coeburn-Clintwood and Wise-Clintwood roads, painted erroneously "1486"..... | 1,595.4 |
| Power's store, about 0.2 mile south of, east side of road, in culvert; bronze tablet stamped "1519 Va"..... | 1,519.015 |
| Cranes Nest River, near Mullin's house; surface of water..... | 1,495.6 |
| Power's store, about 1.1 miles north of, west side of road, on ledge; chiseled square painted "U. S. B. M. 1512"..... | 1,511.29 |
| Cranes Nest River, at junction of Lick Fork; surface of water..... | 1,482.8 |
| Foraker post office, about 1.2 miles north of, west side of road, in stump; copper nail with washer, painted "U. S. B. M. 1609"..... | 1,608.43 |
| Hibbitts Gap, summit of, center of road..... | 1,796.8 |
| Darwin post office, 150 feet west of Long Fork, at path leading to Mr. Grizzle's house, in rock, south side of road; bronze tablet stamped "1555 Va"..... | 1,554.787 |
| Darwin, at road crossing; surface of water in Long Fork..... | 1,548.4 |
| Darwin, about 1.2 miles north of, east side of road, in stump; copper nail with washer, painted "U. S. B. M. 1637"..... | 1,636.68 |
| Clintwood, 2.2 miles south of, 200 feet south of wooden bridge over Laurel Branch, east side of road, on rock; chiseled square painted "1622"..... | 1,621.88 |

COEBURN QUADRANGLE.

[Latitude 36° 45'-37°; longitude 82° 15'-82° 30'.]

From Castlewood station along Norfolk & Western Ry. to milepost N 8.

| | |
|--|-----------|
| Castlewood, in east end, south abutment of highway bridge over Clinch River; aluminum tablet stamped "1484 B 24 1912"..... | 1,483.405 |
| Milepost N 25; spike in base, marked "1485"..... | 1,485.24 |
| Milepost N 24; spike in base, marked "1481"..... | 1,481.18 |
| Fink, on southwest corner of south abutment of Norfolk & Western Ry. bridge over Lick Creek; chiseled cross (railroad elevation, 1,474.08 feet)..... | 1,481.94 |
| St. Paul, in sidewalk at west side of west basement window (south front) of St. Paul National Bank; aluminum tablet stamped "1488 25 B 1912"..... | 1,487.783 |
| St. Paul, 0.8 mile west of, in north end of west abutment of Norfolk & Western Ry. bridge 1390; aluminum tablet stamped "1521 B 26 1912"..... | 1,520.708 |
| Milepost N 21; spike in base, marked "1563"..... | 1,562.50 |
| Milepost N 20; spike in base, marked "1605"..... | 1,604.75 |
| Milepost N 19; spike in base, marked "1637"..... | 1,637.20 |
| Virginia City, 400 feet west of station, in rock in rear of tool house; aluminum tablet stamped "1688 B 27 1912"..... | 1,687.981 |
| Milepost N 17; spike in base, marked "1806"..... | 1,805.58 |
| Milepost N 16, about 200 feet east of, on north end of east abutment of bridge 1369; chiseled cross marked "1796"..... | 1,795.98 |

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|--|--------------------|
| Pine, 0.9 mile east of station, 330 feet west of milepost N 15, in north end of west abutment of railroad bridge; aluminum tablet stamped "1881 B 28 1912" | Feet. 1,881.296 |
| Milepost N 14; spike in base, marked "1962" | 1,961.46 |
| Pine, in front of station; top of rail | 1,969.6 |
| Milepost N 13; spike in base, marked "2038" | 2,038.22 |
| Milepost N 12; spike in base, marked "2013" | 2,012.42 |
| Coeburn, 0.6 mile east of, 900 feet east of milepost N 11, in northwest corner of stone culvert under railroad; aluminum tablet stamped "1994 B 29 1912" | 1,994.086 |
| Milepost N 10; spike in base, marked "1984" | 1,984.32 |
| Milepost N 9; spike in base, marked "1995" | 1,994.89 |
| Milepost N 8; spike in base, marked "2000" | 2,000.31 |

From point near Dante south along Carolina, Clinchfield & Ohio Ry. to Fink.

| | |
|--|-----------|
| Dante, 50 feet northeast of post office, in south end of west abutment of railroad bridge; aluminum tablet stamped "1765 B 15 1912" | 1,764.148 |
| Dante; southwest corner of bridge abutment (railroad elevation, 1,765.12 feet) | 1,765.95 |
| Dante, 0.8 mile south of, west edge of railroad; chisel point on boulder | 1,724.25 |
| Dante, 1.4 miles south of; on southeast foundation of water tank; cross on plate, steel plate stamped "1700 U. S." | 1,699.44 |
| Milepost 44, 60 feet south of, in base of telephone pole; spike, aluminum tag stamped "1652 U. S." | 1,652.02 |
| Dante, 3.5 miles south of, 30 feet east of railroad, at road crossing, 700 feet south of Hamlin station, in granite cliff; aluminum tablet stamped "1623 B 15 1912" | 1,623.009 |
| Milepost 46, 140 feet north of, in northeast corner of trestle; copper nail, aluminum tag stamped "1580 U. S." | 1,579.84 |
| Milepost 47, 360 feet north of, west side of track, in base of telephone pole; spike, aluminum tag stamped "1512 U. S." | 1,511.88 |
| Fink, 1 mile east of St. Paul, on southwest corner of south abutment of Norfolk & Western Ry. bridge over Lick Creek; chiseled cross marked "1481" (railroad elevation, 1,474.08 feet) | 1,481.34 |

From Coeburn north along highway to point 1.7 miles north of Fullers Gap.

| | |
|---|-----------|
| Coeburn, about 1 mile south of Norfolk & Western Ry. abutment, east side of north end; aluminum tablet stamped "1994 Va" | 1,994.086 |
| Coeburn, Norfolk & Western Ry. station, main line; top of east rail | 1,989.0 |
| Bondtown, the Bondtown Mercantile Co. building, at northeast corner, in cement walk; chiseled square painted erroneously "1887" | 1,996.63 |
| Toms Creek, trestle over, 430 feet east of junction with branch to Toms Creek and Cranes Nest River, south side of track, in guardrail; copper nail with washer, painted erroneously "1890" | 2,000.19 |
| Fullers Gap, about 0.25 mile south of, on west side of new graded road, in culvert; bronze tablet stamped "2081 Va." | 2,190.880 |
| NOTE.—Error of 110 feet in stamping. | |
| Fullers Gap, summit of, center of road, painted erroneously "2202" | 2,312.0 |
| Fullers Gap, 0.5 mile north of, south side of culvert over Tracys Fork; chiseled square painted erroneously "2055" | 2,165.39 |

GLADE SPRINGS QUADRANGLE.

[Latitude 36° 45'-37°; longitude 81° 45'-82°.]

From milepost 1 along highway to Old Rosedale.

| | Feet. |
|--|-----------|
| Milepost 1; spike in base..... | 1,832.89 |
| Milepost 2; spike in base..... | 1,803.72 |
| Milepost 3; spike in base..... | 1,818.76 |
| Milepost 4; spike in base..... | 1,817.20 |
| Blackford, in central pier of highway bridge over Clinch River, in north end; aluminum tablet stamped "1811 B 1912"..... | 1,811.350 |
| Blackford, 1 mile south of, on east side of road opposite house; spike in post..... | 1,938.94 |
| Blackford, 2 miles south of, north of road; chisel point on culvert..... | 2,095.37 |
| Blackford, 2.5 miles south of, west edge of road; spike in root of tree..... | 2,286.76 |
| Old Rosedale, 400 yards east of, 150 feet west of road north to Honaker, 8 feet north of road, in limestone ledge; aluminum tablet stamped "2281"..... | 2,280.669 |

HAGAN QUADRANGLE.

[Latitude 36° 30'-36° 45'; longitude 83° 15'-83° 30'.]

From point 1 mile west of Hubbard Springs along Norfolk & Western Ry. to milepost N 59.

| | |
|---|-----------|
| Hubbard Springs, 1 mile west of, 700 feet west of milepost N 43, in rock on south right of way line; aluminum tablet stamped "1625 B 46 1912"... | 1,624.719 |
| Milepost N 44; spike in base marked "1647"..... | 1,646.98 |
| Milepost N 45; spike in base marked "1612"..... | 1,582.22 |
| Hogans, 75 feet northwest of northeast corner of station, in large rock on north side of road; aluminum tablet stamped "1525 B 47 1912"..... | 1,524.705 |
| Milepost N 47; spike in base marked "1573"..... | 1,543.16 |
| Milepost N 48; spike in base stamped "1634"..... | 1,603.60 |
| Rose Hill, 2 miles east of, 700 feet west of milepost N 49, in south end of east abutment of railroad bridge; aluminum tablet stamped "1604 B 48 1912"..... | 1,574.050 |
| Milepost N 50; spike in base not stamped..... | 1,520.59 |
| Milepost N 51, about 1,000 feet east of Rose Hill station; spike in base... | 1,455.94 |
| Rose Hill, 1.5 miles west of, 2,400 feet east of milepost N 53; aluminum tablet stamped "1471 B 49 1912"..... | 1,470.475 |
| Milepost N 54; spike in base stamped "1414"..... | 1,414.50 |
| Enwing, 0.5 mile east of, 200 feet west of milepost N 55, in north end of east abutment of railroad bridge; aluminum tablet stamped "1397 B 50 1912"..... | 1,397.523 |
| Milepost N 56; spike in base marked "1386"..... | 1,385.92 |
| Milepost N 57; spike in base marked "1382"..... | 1,381.95 |
| Caylor, 1.3 miles east of, 1,200 feet west of milepost 58, in rock, 10 feet north of tracks, 100 feet east of crossing; aluminum tablet stamped "1390 B 51 1912"..... | 1,390.148 |
| Milepost N 59; spike in base marked "1366"..... | 1,366.08 |

HANSONVILLE QUADRANGLE.

[Latitude 36° 45'-37°; longitude 82°-82° 15'.]

From milepost N 43 along Norfolk & Western Ry. to milepost N 27.

| | |
|---|-----------|
| Milepost N 42; spike in base, marked "1612"..... | 1,611.42 |
| Finney, 0.5 mile west of, 200 feet west of milepost N 41, in large rock 20 feet south of track; aluminum tablet stamped "1583 B 19 1912"..... | 1,583.029 |
| Milepost N 40; spike in base, marked "1567"..... | 1,567.28 |

| | Feet. |
|--|-------------|
| Milepost N 39; spike in base, marked "1552"..... | 1, 551. 76 |
| Milepost N 38; spike in base, marked "1559"..... | 1, 559. 32 |
| Cleveland, 2.6 miles east of, 125 feet east of milepost N 37, in rock 10 feet south of track; aluminum tablet stamped "1555 B 20 1912"..... | 1, 555. 057 |
| Milepost N 36; spike in base, marked "1548"..... | 1, 547. 60 |
| Milepost N 35; spike in base, marked "1530"..... | 1, 530. 22 |
| Cleveland, in south end of east abutment of highway bridge over Clinch River; aluminum tablet stamped "1523 B 21 1912"..... | 1, 522. 654 |
| Milepost N 34; spike in base, marked "1525"..... | 1, 524. 95 |
| Milepost N 33; spike in base, marked "1524"..... | 1, 521. 41 |
| Kiser, at Francisco's store; sycamore stump (railroad elevation, 1,506.18 feet)..... | 1, 510. 85 |
| Kiser, 825 feet west of, on west end of south abutment of railroad bridge; aluminum tablet stamped "1514 B 22 1912"..... | 1, 513. 614 |
| Milepost N 31; spike in base, marked "1524"..... | 1, 524. 19 |
| Milepost N 30; spike in base, marked "1505"..... | 1, 505. 29 |
| Milepost N 29; spike in base, marked "1497"..... | 1, 496. 87 |
| Canterton, 2 miles west of, 1,225 feet west of milepost N 28, in stone 10 feet north of track; aluminum tablet stamped "1493 B 23 1912"..... | 1, 492. 719 |
| Milepost N 27; spike in base, marked "1504"..... | 1, 503. 99 |

MIDDLESBORO QUADRANGLE (Virginia part).¹

[Latitude 36° 30'–36° 45'; longitude 83° 30'–83° 45'.]

From milepost N 60 along Louisville & Nashville R. R. to milepost N 66.

| | |
|---|-------------|
| Milepost N 60; spike in base, marked "1339"..... | 1, 338. 46 |
| Wheeler, 2 miles east of station, 300 feet west of milepost N 61, in rock 25 feet south of track; aluminum tablet stamped "1336 B 52 1912"..... | 1, 335. 591 |
| Milepost N 62; spike in base, marked "1303"..... | 1, 302. 98 |
| Wheeler, in front of station; top of rail..... | 1, 301. 6 |
| Wheeler, 0.3 mile southwest of station, 75 feet south of switch stand, in southeast corner of culvert; aluminum tablet stamped "1257 B 53 1912"..... | 1, 256. 571 |
| Milepost N 64; spike in base, marked "1267"..... | 1, 267. 29 |
| Milepost N 64, just east of overhead wagon bridge; spike in base, marked "1253"..... | 1, 252. 50 |
| Milepost N 66; spike in base, marked "1237"..... | 1, 236. 34 |
| Shawanee, 1.8 miles east of station, in top of Virginia-Tennessee State-line post on north right of way line of Louisville & Nashville R. R.; aluminum tablet stamped "1249 B 67 1912"..... | 1, 249. 321 |

NOLANSBURG QUADRANGLE.

[Latitude 36° 45'–37°; longitude 83°–83° 15'.]

From milepost N 28 along Louisville & Nashville R. R. to Pennington station.

| | |
|---|-------------|
| Milepost N 28; spike in base, marked "1423"..... | 1, 422. 56 |
| Milepost N 29; spike in base, marked "1362"..... | 1, 362. 34 |
| Pennington, 640 feet west of station, in rock 10 feet south of track; aluminum tablet stamped "1386 B 42 1912"..... | 1, 385. 767 |

¹ For elevations in Kentucky in this quadrangle see Bulletin 554 and for those in Tennessee see Bulletin 441.

POUND QUADRANGLE.¹

[Latitude 37°-57' 15"; longitude 82° 30'-32° 45'.]

From point 1 mile south of Glimmorgan along Wise Terminal R. R. to Glimmorgan, thence along highways to point 3 miles west of Chatwood.

Feet.

| | |
|---|------------|
| Norton, 1 7 miles north of, 15 feet east of track; boulder marked "2090" .. | 2, 089.91 |
| Norton, 3 7 miles north of, 400 feet north of small switch, 15 feet west of track, on east bank of creek; 4-foot oak tree scribed and painted "2115" .. | 2, 114.35 |
| Glimmorgan, 1 mile south of, at south end of village, 300 feet south of switch, 25 feet west of track, 20 feet east of end of stone fence, in boulder; aluminum tablet stamped "2153 B 1 1912" .. | 2, 183.235 |
| Glimmorgan, 100 feet south of, west edge of road; chisel point on concrete culvert, marked "2219" .. | 2, 218.63 |
| Glimmorgan, 0 8 mile north of, west edge of road; chisel point on concrete culvert, marked "2157" .. | 2, 196.38 |
| Glimmorgan, 1 5 miles north of, east edge of road, at switchback; chisel point on boulder, marked "2320 U. S." .. | 2, 319.64 |
| Glimmorgan, 2 miles north of, summit of Indian Mountain, 40 feet east of road, in boulder, aluminum tablet stamped "2483 B 2 1912" .. | 2, 483.268 |
| Indian Mountain, 1 1 miles north of, west edge of road; chisel point on rock, marked "2154 U. S." .. | 2, 153.96 |
| Indian Mountain, 2 miles north of, west edge of road, 50 feet north of J. Grit Freeman's mail box, chisel point on culvert, marked "1826" .. | 1, 825.55 |
| Indian Mountain, 2 6 miles north of, at foot of long grade, west edge of road, west edge of north abutment of bridge over fork creek; chisel point, marked "1779" .. | 1, 678.79 |
| Riner's farmhouse, 1 mile north of, west edge of road, in slate cliff 2 feet above road, aluminum tablet stamped "1638 B 3 1912" .. | 1, 637.633 |
| Pound, 4 3 miles south of, east side of road; copper nail in 3-foot maple tree, marked "1640 U. S." .. | 1, 639.66 |
| Pound, 3 miles south of, west bank of creek, west edge of road, where road crosses to east side of creek; copper nail in 24-foot oak tree, marked "1608 U. S." .. | 1, 608.23 |
| Pound, 2 7 miles south of, east edge of road, in top of culvert; aluminum tablet stamped "1606 B 4 1912" .. | 1, 605.395 |
| Pound, 1 2 miles south of, 50 feet north of railroad crossing, 30 feet south of schoolhouse, 15 feet west of road; copper nail in base of walnut tree, marked "1596 U. S." .. | 1, 595.62 |
| Pound, 1,000 feet north of station, east edge of road, in concrete culvert; aluminum tablet stamped "1547 B 5 1912" .. | 1, 546.452 |
| Pound, 1 2 miles southeast of, 400 feet north of road forks, 200 feet north of store, west edge of road; copper nail in base of 24-foot chestnut tree, scribed "1598 U. S." .. | 1, 597.40 |
| Pound, 2 3 miles east of, 800 feet north of road forks, west edge of road, in base of 18-inch sycamore tree; copper bolt marked "1573 U. S." .. | 1, 572.89 |
| Pound, 3 4 miles east of, 400 feet east of Mead farm house, south edge of road, in large boulder under maple tree; aluminum tablet stamped "1646 B 6 1912" .. | 1, 645.478 |
| Pound, 4 miles east of, north edge of road, near foot of steep grade; chisel point of large boulder, marked "1771 U. S." .. | 1, 770.99 |
| Pound, 5 miles east of, in gap at summit of ridge, east edge of road; copper nail in base of 1-foot black-oak tree, scribed "2156 U. S." .. | 2, 155.62 |

¹ For elevations in Kentucky in this quadrangle see Bulletin 554.

| | |
|---|---------------------|
| Summit of ridge, 0.7 mile east of, south edge of road; copper nail in base of 3-foot white-oak tree, scribed "1677 U. S."..... | Feet. 1, 677. 06 |
| Clintwood, 4 miles west of, 150 feet west of schoolhouse, 20 feet north of road, in boulder; aluminum tablet stamped "1617 B 7 1912"..... | 1, 616. 285 |
| Clintwood, 3 miles west of, south edge of road; copper nail in base of 2½-foot white-oak tree, marked "1574 U. S."..... | 1, 573. 44 |

From Pound Gap south along highway to Pound.

| | |
|--|-------------|
| Pound Gap, summit of, 25 feet east of road, 50 feet south of house; chiseled square on ledge, marked "U. S. B. M. 2408"..... | 2, 407. 43 |
| Pound Gap, 1 mile south of, 60 feet west of Rocky Branch station, opposite shed, 8 feet east of stump, in ledge; aluminum tablet not stamped.... | 1, 940. 812 |
| Pound, 2.3 miles north of, 5 feet west of narrow-gage railroad; nail in root of beech tree, marked "U. S. B. M. 1598"..... | 1, 597. 52 |

From Pound southwest along highway to Dewey (double spur).

| | |
|---|-------------|
| Pound, 1,000 feet north of station, east edge of road, in concrete culvert; aluminum tablet stamped "1547 B 5 1912"..... | 1, 546. 452 |
| Pound, 1 mile west of, 250 feet west of road crossing, south of track; chiseled square on ledge, marked "B. M. 1557"..... | 1, 557. 118 |
| Pound, 3.1 miles west of, 150 feet east of white house, south of road; chiseled square on boulder, marked "B. M. 1580"..... | 1, 579. 79 |
| Pound, 4 miles west of, 200 feet southeast of Gladly Fork schoolhouse, south of road, in rock ledge; aluminum tablet stamped "1599 Va. 1912"..... | 1, 598. 669 |
| Pound, 5.7 miles west of, 50 feet southeast of road forks, north of road; chiseled square on rock ledge, marked "B. M. 1632"..... | 1, 632. 07 |
| Dewey, 600 feet north of, 8 feet west of road, 4 feet above road, in solid rock; aluminum tablet stamped "1693 Va"..... | 1, 692. 418 |

At Lipps (double spur line from point near Norton).

| | |
|---|------------|
| Lipps, 0.5 mile south of, 20 feet west of road, opposite store, in sandstone rock; aluminum tablet stamped "2231 Va"..... | 2, 230. 37 |
|---|------------|

From Kentucky-Virginia State line along highways to Dewey.

| | |
|---|------------|
| Flat Gap, 570 feet east of post office, north end of stone culvert under highway, on top of; chiseled square marked "1919.3"..... | 1, 918. 97 |
| Flat Gap, 0.3 mile east of highway culvert over North Fork of Pound River, on top of north end of west concrete guardrail; chiseled square marked "1884.5"..... | 1, 884. 17 |
| Flat Gap, 1 mile east of, at road crossing on top of ridge between North and South forks of Pound River, at head of Meadow Branch, at top at north end of gap, 200 feet west of bend in road to south, north side of road, east side of gap, at fence corner, in root of 2-foot chestnut tree; copper nail marked "2116.5"..... | 2, 116. 15 |
| Dewey, 1.8 miles west of, at fork in road west up South Fork of Pound River, 200 feet east of greenhouse standing on north side of road, at mouth of hollow from north, on top of north end of stone culvert under road; chiseled square marked "1837.3"..... | 1, 836. 98 |
| Dewey, 1.4 miles west of, steel highway bridge over South Fork of Pound River, on west abutment, top of south wing wall; chiseled square marked "1764.6"..... | 1, 764. 27 |

Near Carter's store (on line from Coeburn to Clintwood).

| | |
|--|------------|
| Carter's store, about 0.3 mile north of, near Flat Gap, east side of road, top of culvert; chiseled square painted erroneously "1499"..... | 1, 608. 51 |
|--|------------|

POUNDING MILL QUADRANGLE.

[Latitude 37°-37° 15'; longitude 81° 30'-81° 45'.]

From milepost N 82 along Norfolk & Western Ry. to milepost N 67.

| | Feet. |
|--|-------------|
| Milepost N 81; spike in base, aluminum tag stamped "2382"..... | 2, 382. 33 |
| Tazewell, 700 feet east of station, railroad bridge over creek; chisel point on south end of east abutment, marked "2380"..... | 2, 379. 90 |
| Tazewell, 60 feet south of station, on south edge of road, in bowlder; aluminum tablet stamped "2386 B 6 Va. 1912"..... | 2, 385. 811 |
| Milepost N 80; spike in base, aluminum tag stamped "2376"..... | 2, 376. 05 |
| Milepost N 79; spike in base, aluminum tag stamped "2370"..... | 2, 370. 30 |
| Milepost N 78; spike in base, aluminum tag stamped "2365"..... | 2, 365. 36 |
| Pisgah, 150 feet west of tool house, 30 feet north of track, in bowlder; aluminum tablet stamped "2360 B 7 Va. 1912"..... | 2, 359. 596 |
| Milepost N 76, 40 feet west of, higher than track; spike in base of ledge, marked "2419"..... | 2, 418. 72 |
| Youngs station; spike in base of semaphore, aluminum tag stamped "2422"..... | 2, 422 |
| Maxwell, 65 feet south of mail crane, 25 feet northeast of store, in bowlder; aluminum tablet stamped "2371 8 B 1912"..... | 2, 370. 922 |
| Milepost N 74; spike in base, aluminum tag stamped "2328"..... | 2, 327. 51 |
| Milepost N 73; spike in base, aluminum tag stamped "2304"..... | 2, 303. 44 |
| Pounding Mill, 3 miles east of, opposite milepost N 72, in south end of west abutment of bridge N 1334; aluminum tablet stamped "2262 B 9 1912"..... | 2, 262. 364 |
| Gillespie, in front of station; top of rail..... | 2, 259. 8 |
| Milepost N 71; spike in base, aluminum tag stamped "2229"..... | 2, 227. 41 |
| Milepost N 70; spike in base, aluminum tag stamped "2193"..... | 2, 191. 34 |
| Pounding Mill, in front of station; top of rail..... | 2, 157. 6 |
| Pounding Mill, 550 feet west of station, 10 feet south of track, in limestone at west end of rock cut; aluminum tablet stamped "2153 B 10 1912".... | 2, 150. 958 |
| Milepost N 68; spike in base, marked "2117"..... | 2, 114. 87 |
| Milepost N 67; spike in base, marked "2078"..... | 2, 076. 04 |

REGINA QUADRANGLE.¹

[Latitude 37° 15'-37° 30'; longitude 82° 15'-82° 30'.]

Near The Towers (set from Carolina, Clinchfield & Ohio Ry. bench marks).

| | |
|---|-------------|
| Carolina, Clinchfield & Ohio Ry. b. m., Maple, 50 feet to right of station, 330+80, residency No. 1 (last b. m., of list of Elkhorn extension)..... | 1, 143. 42 |
| The Towers, about 0.5 mile west of, 60 feet south of footbridge over Russells Fork, north side of track, in culvert; bronze tablet not stamped..... | 1, 128. 210 |

RICHLANDS QUADRANGLE.

[Latitude 37°-37° 15'; longitude 81° 45'-82°.]

From milepost N 66 along Norfolk & Western Ry. to milepost N 45.

| | |
|--|-------------|
| Milepost N 66; spike in base, marked "2032"..... | 2, 030. 06 |
| Cedar Bluff, in front of station; top of rail..... | 2, 001. 2 |
| Cedar Bluff, 720 feet west of station, 220 feet east of milepost N 65, railroad bridge over Clinch River, in north end of west abutment; aluminum tablet stamped "1996 B 11 1912"..... | 1, 993. 648 |
| Milepost N 64; spike in base, marked "1959"..... | 1, 957. 04 |
| Milepost N 63; spike in base, marked "1938"..... | 1, 935. 72 |
| Richlands, in front of station; top of rail..... | 1, 936. 3 |

¹ For elevations in Kentucky in this quadrangle see Bulletin 554.

| | |
|---|--------------------|
| Richlands, 2,000 feet west of, in top of south end of west abutment of highway bridge over Clinch River; aluminum tablet stamped "1937 B 12 1912" | Feet. 1,935.196 |
| Milepost N 61; spike in base, marked "1927" | 1,924.81 |
| Milepost N 60; spike in base, marked "1920" | 1,919.42 |
| Raven, 280 feet east of station, in north end of west abutment of bridge 1358; aluminum tablet stamped "1909 B 13 1912" | 1,909.247 |
| Raven, in front of station; top of rail | 1,910.9 |
| Milepost N 58; spike in base, marked "1903" | 1,902.70 |
| Milepost N 57; spike in base, marked "1900" | 1,899.98 |
| Dan; spike in base of signboard, marked "1895" | 1,894.59 |
| Milepost N 55, 100 feet east of, in limestone 10 feet north of track; aluminum tablet stamped "1896 B 14 1912" | 1,895.831 |
| Milepost N 54, 200 feet east of; spike in base of "C" post, marked "1885" | 1,884.71 |
| Milepost N 53; spike in base, marked "1877" | 1,878.52 |
| Milepost N 52; spike in base, marked "1868" | 1,867.53 |
| Swords Creek, 0.6 mile east of, in front of Charles King's residence, in limestone 35 feet north of track; aluminum tablet stamped "1864 B 15 1912" | 1,864.000 |
| Milepost N 51; spike in base, marked "1867" | 1,866.92 |
| Swords Creek, in front of station; top of rail | 1,867.8 |
| Milepost N 50; spike in base, marked "1869" | 1,869.20 |
| Gardner, 80 feet east of station, in limestone 25 feet south of track; aluminum tablet stamped "B 16 1912" | 1,913.040 |
| Milepost N 48; spike in base, marked "1911" | 1,911.05 |
| Honaker, 0.6 mile east of, bridge 1461; bolt in north end of west guardrail | 1,882.30 |
| Honaker, in north face at northwest corner of public-school building; aluminum tablet stamped "1924 B 1912" | 1,924.122 |
| Honaker, 360 feet east of station, in limestone 70 feet north of track and north of stone culvert under railroad; aluminum tablet stamped "B 17 1912" | 1,907.557 |
| Milepost N 46, opposite Honaker station; spike in base | 1,908.93 |
| Milepost N 45; spike in base, marked "1853" | 1,852.80 |

From point 0.6 mile east of Honaker to milepost 1.

| | |
|---|----------|
| Honaker, 0.6 mile east of, bridge 1461; bolt in north end of west guardrail | 1,882.30 |
| Milepost 1; spike in base | 1,832.89 |

SNEEDVILLE QUADRANGLE.

[Latitude 36° 30'–36° 45'; longitude 83°–83° 15']

From milepost N 31 along Louisville & Nashville R. R. to milepost N 42.

| | |
|--|-----------|
| Milepost N 31; spike in base, marked "1379" | 1,379.33 |
| Milepost N 32; spike in base, marked "1428" | 1,427.96 |
| Milepost N 33; spike in base, marked "1492" | 1,491.60 |
| Ben Hur, 600 feet east of, 15 feet south of track, in rock ledge; aluminum tablet stamped "1533 B 43 1912" | 1,532.712 |
| Milepost N 34, 1.5 miles west of Ben Hur; spike in base, marked "1615" | 1,614.95 |
| NOTE.—The post is painted "N 34" but should be "N 35." | |
| Milepost N 36; spike in base, marked "1680" | 1,680.03 |
| Ocoonita, 500 feet east of station, in north end of culvert under railroad; aluminum tablet stamped "1674 B 44 1912" | 1,673.512 |
| Milepost N 38; spike in base, marked "1630" | 1,629.89 |
| Milepost N 39; spike in base, marked "1600" | 1,600.02 |
| Hubbard Springs, 2 miles east of, 125 feet west of milepost N 40, in rock on north right of way line; aluminum tablet stamped "1556 B 45 1912" | 1,555.549 |
| Milepost N 41; spike in base, marked "1599" | 1,599.18 |
| Milepost N 42; spike in base, marked "1568" | 1,568.05 |

WISE QUADRANGLE.

[Latitude 36° 45'-37°; longitude 82° 30'-82° 45'.]

From point 1 mile east of Norton along Norfolk & Western Ry. to Norton, thence along Louisville & Nashville R. R. to milepost N 6.

| | |
|--|--------------------|
| Tacoma, 1 mile east of, at northwest corner of yard to company store, in rock just outside of fence; aluminum tablet stamped "2000 B 30 1912". | Feet. 2,000.628 |
| Milepost N 7; spike in base, marked "1997" | 1,997.27 |
| Tacoma, in front of station; top of rail | 2,000.6 |
| Milepost N 6; spike in base, marked "1998" | 1,998.63 |
| Milepost N 5; spike in base, marked "2005" | 2,005.50 |
| Milepost N 4; spike in base, marked "2014" | 2,014.94 |
| Norton, 3.3 miles east of, in north end of second pier from east end of bridge 1405; aluminum tablet stamped "2043" | 2,043.629 |
| Milepost N 2; spike in base, marked "2081" | 2,081.28 |
| Milepost N 1; spike in base, marked "2101" | 2,101.10 |
| Norton, in front of station; top of rail | 2,102.7 |
| Norton, in stone step at front entrance to First National Bank building; aluminum tablet stamped "2135 B 32 1912" | 2,135.121 |
| Norton, 3,000 feet east of station, 75 feet west to Wise Terminal Junction; 18-inch hemlock tree (railroad elevation, 2101.96 feet) | 2,101.13 |
| Milepost N 2, L 288 C 116; spike in base, marked "2078" | 2,077.82 |
| Blackford, 1 mile east of, at milepost N 3, in rock 15 feet south of track; aluminum tablet stamped "2017 B 33 1912" | 2,017.216 |
| Milepost N 4; spike in base, marked "1952" | 1,951.62 |
| Milepost N 5; spike in base, marked "1890" | 1,889.82 |
| Blackford, 2 miles west of, 170 feet west of milepost N 6, in rock 30 feet south of track at east end of cut; aluminum tablet stamped "1827 B 34 1912" | 1,826.764 |

From Norton along Wise Terminal R. R. to point 1 mile south of Giamorgan.

| | |
|--|----------|
| Norton, 1.7 miles north of, 15 feet east of track; chiseled mark on bowlder, marked "2090" | 2,090.00 |
| Norton, 3.7 miles north of, on east bank of creek, 400 feet north of small switch, 15 feet west of track; 4-foot oak tree, scribed and painted "2115" .. | 2,114.40 |

From point 3.7 miles north of Norton north to Lipps (double spur line).

| | |
|--|----------|
| Norton, 4.5 miles north of, 4 feet west of road; chiseled square on top of concrete culvert, marked "2126" | 2,125.97 |
| Lipps, 1.5 miles south of, 75 feet north of road west, 6 feet west of road; chiseled square top of concrete culvert, marked "2157" | 2,156.68 |

Peterstown quadrangle.

GILES COUNTY.

The elevations in the following list were determined by primary levels and accord with the 1912 adjustment. For elevations in West Virginia in this quadrangle see Bulletin 477.

The leveling was done in 1913, by H. S. Senseney.

PETERSTOWN QUADRANGLE.¹

[Latitude 37° 15'–37° 30'; longitude 80° 45'–81°.]

From Peterstown, W. Va., southwest to Glenlyn, Va. (Virginia part of line from Mer-
cers Salt Works, W. Va.).

| | Feet. |
|---|-------------|
| Peterstown, 1.2 miles south of, south side of road, 10 feet east of gate, on rock; chiseled square..... | 1, 702. 29 |
| Rich Creek, 250 feet south of station, trestle over road, in west end of south abutment; bronze tablet stamped "1531"..... | 1, 530. 497 |
| Rich Creek, New River at ford; surface of water, Sept. 19, 1913 | 1, 499 |
| Lurich, in front of station; top of rail..... | 1, 535. 5 |
| Glenlyn, in front of station; top of rail..... | 1, 533 |
| Glenlyn, 528 feet west of station, south side of track, in culvert; aluminum tablet stamped "1535"..... | 1, 535. 109 |

¹ For the elevations in West Virginia in this quadrangle see Bulletin 477.

APPENDIX A

ELEVATIONS ADJUSTED BY THE COAST AND GEODETIC SURVEY FROM PRECISE LEVELING.

Bowling Green, Charles City, Doswell, Hampton, Mount Vernon, Newport News, Richmond, Stafford, Toano, Williamsburg, and Yorktown quadrangles.

CAROLINE, ELIZABETH CITY, FAIRFAX, HANOVER, HENRICO, JAMES CITY, NEW KENT, PRINCE WILLIAM, PITTSYLVANIA, STAFFORD, WARWICK, AND YORK COUNTIES.

The following descriptions and elevations are taken from reports of the Coast and Geodetic Survey and are republished by permission of the superintendent of that bureau. The bench marks were established by the Coast and Geodetic Survey and were included in the 1907 adjustment by that survey, and were not changed by the 1912 adjustment.

BOWLING GREEN QUADRANGLE.

[Latitude 38°-38° 15'; longitude 77° 15'-77° 30'.

From Penola to point near Summit.

| | |
|--|------------------|
| Milford, in front of brick section house of Richmond, Fredericksburg & Potomac R. R., 100 yards north of railroad station, in ninth course above ground and in fifth brick north of front or east door; copper bolt (C. & G. S. b. m. K 1)..... | Feet. 102.323 |
| Guinea, 1 mile south of, in stone retaining wall to brick culvert, 100 meters north of milepost 48, on west side of track and north side of culvert, on third step from top, near center of exposed part of stone; bottom of roughly cut square hole (C. & G. S. b. m. I 2)..... | 126.887 |
| Summit, 0.5 mile south of, 200 meters south of milepost 53, on east side of track, in north stone of sandstone coping at end of brick culvert; bottom of square cut lettered "U. S. □ B. M." (C. & G. S. b. m. I 1)..... | 199.546 |

CHARLES CITY QUADRANGLE.

[Latitude 37° 15'-37° 30'; longitude 77°-77° 15'.]

From point near Lanexa to Roxbury.

| | |
|--|--------|
| Providence Forge, in north side of chimney at north end of Mr. Townsend's dwelling house, in eighth course of bricks from ground and in eighth brick north end of chimney; copper bolt (C. & G. S. b. m. Q)..... | 32.144 |
| Roxbury, in brick chimney at west end of T. L. Walker's residence, in tenth course of bricks from ground and in third brick from west side of chimney; copper bolt (C. & G. S. b. m. P 5)..... | 42.830 |

DOSWELL QUADRANGLE.

[Latitude 37° 45'-38°; longitude 77° 15'-77° 30'.]

From point near Doswell to Penola.

| | |
|--|---------|
| Doswell, 0.2 mile south of, at bridge 37 of Richmond, Fredericksburg & Potomac R. R., 1.2 miles below Chesapeake & Ohio Ry. junction, in southwest corner of south abutment of wooden bridge, 0.17 meter from extreme north edge of rock and 0.46 meter from extreme west edge; bottom of square cut (C. & G. S. b. m. M)..... | 146.565 |
|--|---------|

| | |
|---|------------------|
| Rutherglen, in west wall of brick railroad section house, in twelfth course from ground and in third brick from northwest corner, in right side of wall as one enters door; cross in end of copper bolt (C. & G. S. b. m. K 3)..... | Feet. 205.127 |
| Penola, in west face of brick chimney at back of house and store owned by Mrs. A. B. De Jarnett and facing railroad track, in seventeenth course above brick foundation to house and in second brick from northwest corner; copper bolt (C. & G. S. b. m. K 2)..... | 97.483 |

HAMPTON QUADRANGLE.

[Latitude 37°-37° 15'; longitude 76° 15'-76° 30'.]

From Old Point Comfort lighthouse to Newport News.

| | |
|--|--------|
| Old Point Comfort, on southwest side of lighthouse at Fort Monroe, in stone about 1.5 feet from ground, referenced by middle of lower horizontal edge of indenture; a figure <u>U. S. C. S.</u> (C. & G. S. b. m. Old Tidal).. | 9.630 |
| Old Point Comfort, on southwest side of lighthouse at Fort Monroe, in stone directly beneath the Old Tidal b. m. and 0.215 meter above ground, 0.0125 meter in diameter and 0.055 meter in length; copper bolt (C. & G. S. b. m. U)..... | 8.817 |
| Fort Monroe, on outer wall of fort, on right-hand side of postern gate, in second granite block from gate, in eleventh course of stone; cross cut (C. & G. S. b. m. Fort)..... | 11.049 |

At Morrison.

| | |
|---|--------|
| Morrison, in brick chimney of one-story frame house in yard of D. H. Jones's residence, on north side of chimney, in tenth course from ground and in second brick from outer or northeast corner; copper bolt (C. & G. S. b. m. R 3)..... | 32.392 |
|---|--------|

MOUNT VERNON QUADRANGLE.

[Latitude 38° 30'-39°; longitude 77°-77° 30'.]

From point near Widewater to point near Alexandria.

| | |
|---|--------|
| Quantico, in side wall of brick building owned by Max Lansburgh, opposite railroad station, east of track, in twelfth course above ground and in third brick from northwest corner; copper bolt (C. & G. S. b. m. G 5)..... | 35.222 |
| Woodbridge, 0.5 mile north of, in top at northwest corner of large granite block set in red sandstone of first pier from north end of bridge over Occoquan River, under the end of iron superstructure, east of track; bottom of square (C. & G. S. b. m. G 4)..... | 68.746 |
| Pohick Creek, north abutment of iron bridge of Richmond, Fredericksburg & Potomac R. R., east of track, southeast corner of abutment, in edge of capstone; surface of offset cut (C. & G. S. b. m. G 3)..... | 63.830 |
| Accotink, 0.2 mile north of, in north abutment to small wooden railroad bridge (No. 20), west of track, on offset below top on which end of bridge rests; bottom of square cut (C. & G. S. b. m. G 2)..... | 82.126 |
| Cameron Run, 3 miles west of Alexandria, in top of third step from top of north granite abutment to iron bridge of Baltimore & Potomac R. R., over Cameron Run, east of track; bottom of square hole, lettered "U. S. B. M." (C. & G. S. b. m. G 1)..... | 51.463 |
| Alexandria, near middle of sill of northwest window of customhouse, 0.12 meter from extreme west edge of sill and 0.115 meter from extreme east edge; square mark (C. & G. S. b. m. G)..... | 46.740 |

NEWPORT NEWS QUADRANGLE.

[Latitude 36° 45'–37°; longitude 76° 15'–76° 30'.]

At Newport News.

| | |
|---|-----------------|
| Newport News, south side of Lafayette House, near middle of house, on stone doorsill, 0.055 meter from south edge of sill and 0.1663 meter from extreme west edge; bottom of square cut (C. & G. S. b. m. S)..... | Feet. 22.357 |
|---|-----------------|

RICHMOND QUADRANGLE.

[Latitude 37° 30'–37° 45'; longitude 77° 15'–77° 30'.]

From Richmond to Ashland.

| | |
|---|---------|
| Richmond, near north end of Richmond, Fredericksburg & Potomac R. R. freight station, on granite sill of second door on west side, 0.150 meter from extreme west edge of door and 0.654 meter from north side; bottom of square cut (C. & G. S. b. m. O)..... | 190.930 |
| Laurel, reform school, in granite sill of south door on east side of brick workshop, on upper (outer) edge of sill, 0.15 meter from south end; bottom of square cut (C. & G. S. b. m. N ₁)..... | 219.374 |
| Ashland, southeast door of Duncan Memorial Chapel adjoining Randolph-Macon College, 0.15 meter from south edge of sill, 0.155 meter from east side of brick wall, 0.184 meter from door jamb; bottom of square cut in sill (C. & G. S. b. m. N)..... | 221.170 |

In Richmond and vicinity.

| | |
|---|---------|
| Richmond, 1.5 miles east of, top of stone coping to brick culvert under Chesapeake & Ohio R. R., 140 meters east of milepost 81, on south end of culvert and on eastern or largest stone of coping on raised part of culvert; bottom of square hole lettered "U. S. □ B. M." (C. & G. S. b. m. P4)... | 112.405 |
| Richmond, corner of Seventeenth Street and Winston Alley, brick building owned by Davenport & Morris and occupied by the Union Brokerage Commission & Warehouse Co., at northeast corner of building and nearly on level with pavement, top of stone door and window sill (on which iron columns in front of building rest); bottom of square cut, lettered "U. S. C. & G. S. □ B. M." (C. & G. S. b. m. P3)..... | 19.625 |
| Richmond, corner of Seventeenth and Dock streets, on front of brick building owned and occupied by Davenport & Morris, in granite sill of window at right-hand corner (as one faces the front of building); cross cut, lettered "U. S. C. & G. S. + B. M." (C. & G. S. b. m. P2)..... | 22.066 |
| Richmond, flat surface of an offset on granite base to lamppost on left of steps leading to west entrance to new city hall (C. & G. S. b. m. New City Hall)..... | 164.183 |
| Richmond, at head of Grace Street, in granite sill of east front door of Richmond College, near south end of sill, 0.142 meter from extreme east edge of sill and 0.174 meter from south edge of door; bottom of square cut (C. & G. S. b. m. P)..... | 205.883 |
| Richmond, at intersection of Poplar and Ash streets, in side of stone post 15 by 15 inches, iron plate facing river and inscribed "High-water line, 24 feet 1.8 inches above ordinary high tide, Oct. 1, 1870;" middle line of raised horizontal arrow on plate (C. & G. S. b. m. city b. m.)..... | 25.485 |

STAFFORD QUADRANGLE.

[Latitude 38° 30'–38° 45'; longitude 77° 15'–77° 30'.]

From point near Summit to point near Widewater.

| | |
|--|-----------------|
| Fredericksburg, in sill of Princess Anne Street door to library in courthouse, near northwest corner of building, 0.051 meter from extreme east edge of sill and 0.11 meter from south side of door; bottom of square cut (C. & G. S. b. m. I)..... | Feet. 69.066 |
| Fredericksburg, bridge of Richmond, Fredericksburg & Potomac R. R. over Rappahannock River, in northwest corner of stone coping of west abutment, below top of abutment and 0.181 meter from extreme east edge of stone in which it is cut, 0.056 meter from extreme north edge, 0.084 meter from abutment wall; bottom of square cut (C. & G. S. b. m. H).... | 43.073 |
| Potomac Run station, near, in north stone abutment of iron railroad bridge over Potomac Run, west of track and at end of ironwork of bridge; bottom of square cut (C. & G. S. b. m. G 8)..... | 84.993 |
| Brooke, a short distance south of station, in top of sandstone coping to retaining wall of brick culvert under railroad, east of track, near south end of wall above the arch; bottom of square cut, lettered "U.S. □ B.M." (C. & G. S. b. m. G 7)..... | 58.919 |
| Widewater, 0.5 mile south of, in top of retaining wall to brick culvert under railroad, east of track and near north end of wall above the arch; bottom of square cut, lettered "U.S. □ B.M." (C. & G. S. b. m. G 6)..... | 7.373 |

TOANO QUADRANGLE.

[Latitude 37° 15'–37° 30'; longitude 76° 45'–77°.]

From Williamsburg to Lanexa.

| | |
|--|---------|
| Toano, in top of brick foundation under railroad water tank, in top of third sill from track, 3.5 inches from west end and 2 inches from north side of foundation; bottom of square cut (C. & G. S. b. m. Q 4)..... | 101.143 |
| Diascond, in brick chimney of frame dwelling house owned by John Gordon and occupied by J. C. Glasebrook, in east side of chimney in eleventh course of bricks above ground, in third brick from northeast corner; copper bolt (C. & G. S. b. m. Q 3)..... | 44.431 |
| Lanexa, near, in top of raised part of brick culvert under Chesapeake & Ohio Ry. just above station, at north end of culvert and 0.5 meter from its west side; bottom of square cut, lettered "U.S. □ B.M." (C. & G. S. b. m. Q 2)..... | 7.676 |

WILLIAMSBURG QUADRANGLE.

[Latitude 37° 15'–37° 30'; longitude 76° 30'–76° 45'.]

At Williamsburg.

| | |
|--|--------|
| Williamsburg, north side of courthouse near east end, in eleventh layer of bricks above watershed of building, in third brick from corner of north wing; copper bolt 0.058 meter long and 0.0125 meter in diameter (C. & G. S. b. m. R)..... | 88.884 |
|--|--------|

YORKTOWN QUADRANGLE.

[Latitude 37°–37° 15'; longitude 76° 30'–76° 45'.]

At Lee Hall.

| | |
|---|--------|
| Lee Hall, in west wall of two-story brick outhouse in yard of E. C. Madison's residence, in seventh course above ground and in third brick from southwest corner; copper bolt (C. & G. S. b. m. R 2)..... | 63.921 |
|---|--------|

APPENDIX B.

SECONDARY ELEVATIONS.

Secondary elevations from records and topographic maps of the United States Geological Survey, including altitudes of well-known summits and other useful elevations, are given below. These elevations are approximate only and should not be used for accurate work.

| Name or locality. | Quadrangle. | County. | Elevation. <i>Feet.</i> |
|---|-------------------------|--|----------------------------|
| Abners Knob..... | Christiansburg..... | Montgomery..... | 2,538 |
| Adams Peak..... | Lexington..... | Rockbridge..... | 2,000 |
| Ad Cox Knob..... | Natural Bridge special. | Botetourt-Rockbridge. | 3,498 |
| Amelia..... | Amelia..... | Amelia..... | 358 |
| Angels Rest..... | Dublin..... | Giles..... | 3,000 |
| Apple Orchard Mountain..... | Natural Bridge special. | Bedford-Botetourt..... | 4,294 |
| Arnolds Knob..... | Christiansburg..... | Craig, Va.-Monroe, W. Va. | 3,920 |
| Ashburn..... | Seneca..... | Loudoun..... | 360 |
| Back Creek Mountain..... | Natural Bridge special. | Botetourt..... | 2,780 |
| Bald Knob..... | Dublin..... | Giles..... | 4,248 |
| Do..... | Staunton..... | Augusta..... | 4,410 |
| Bald Knob triangulation station..... | Natural Bridge..... | Bath..... | 4,245 |
| Bangs..... | Christiansburg..... | Montgomery..... | 2,007 |
| Barbett Knob..... | Hillsville..... | Carroll..... | 3,084 |
| Beamer Knob..... | do..... | do..... | 3,400 |
| Beartown Mountain..... | Abingdon..... | Russell..... | 4,604 |
| Bear Wallow triangulation station..... | Tazewell..... | Buchanan - Tazewell, Va., and McDowell, W. Va. | 3,170 |
| Bedford Springs..... | Lynchburg..... | Campbell..... | 800 |
| Berryville..... | Harpers Ferry..... | Clarke..... | 571 |
| Big Bend triangulation station..... | Pocahontas..... | Bland-Wythe..... | 4,000 |
| Big Butt..... | Grundy..... | Buchanan-Russell..... | 3,701 |
| Big House Mountain..... | Natural Bridge..... | Rockbridge..... | 3,612 |
| Big Knob..... | Estillville..... | Scott..... | 3,217 |
| Blacksburg..... | Christiansburg..... | Montgomery..... | 2,170 |
| Blackstone..... | Amelia..... | Nottoway..... | 432 |
| Bland..... | Pocahontas..... | Bland..... | 2,470 |
| Bluff Mountain..... | Lexington..... | Amherst-Rockbridge..... | 3,380 |
| Bremo Bluff..... | Palmyra..... | Fluvanna..... | 234 |
| Briar Patch Mountain..... | Wytheville..... | Grayson..... | 3,050 |
| Buck Mountain..... | Roanoke..... | Roanoke..... | 1,992 |
| Do..... | Wytheville..... | Grayson..... | 4,080 |
| Burkeville..... | Farmville..... | Nottoway..... | 523 |
| Butt Mountain..... | Dublin..... | Giles..... | 4,195 |
| Camp Mountain..... | Natural Bridge special. | Botetourt-Rockbridge..... | 3,318 |
| Cartersville..... | Palmyra..... | Cumberland..... | 263 |
| Cartinoll Gap..... | Natural Bridge special. | Botetourt..... | 1,988 |
| Central..... | Dublin..... | Pulaski..... | 1,785 |
| Cores..... | Pocahontas..... | Bland..... | 2,760 |
| Chalk Mine Mountain..... | Lexington..... | Rockbridge..... | 2,980 |
| Chester..... | Bermuda Hundred..... | Chesterfield..... | 146 |
| Chesterfield..... | Amelia..... | do..... | 208 |
| Chisel Knob..... | Hillsville..... | Carroll..... | 3,055 |
| Christiansburg..... | Christiansburg..... | Montgomery..... | 2,000 |
| Clinch Mountain..... | Pocahontas..... | Tazewell..... | 4,734 |
| Clinch triangulation station..... | Bristol..... | Washington..... | 4,223 |
| Clintwood..... | Grundy..... | Dickinson..... | 1,800 |
| Coeburn..... | Bristol..... | Wise..... | 1,981 |
| Coles Knob..... | Christiansburg..... | Floyd..... | 2,903 |
| Columbia..... | Palmyra..... | Fluvanna..... | 205 |
| Comer Rock..... | Wytheville..... | Grayson-Wythe..... | 4,113 |
| Cove Mountain..... | Natural Bridge special. | Botetourt..... | 2,073 |
| Davis Knob..... | Hillsville..... | Grayson..... | 3,020 |
| Dinwiddie..... | Amelia..... | Dinwiddie..... | 267 |
| Drummond Lake, water surface..... | Norfolk..... | Nansemond-Norfolk..... | 22 |
| Elk Garden Ridge..... | Abingdon..... | Russell..... | 3,250 |
| Elk Knob..... | Estillville..... | Lee..... | 3,243 |
| Elliott Knob triangulation station..... | Staunton..... | Augusta..... | 4,473 |

| Name or locality. | Quadrangle. | County. | Elevation. <i>Feet.</i> |
|--|------------------------|-----------------------------------|----------------------------|
| Evergreen | Appomattox | Appomattox | 730 |
| Evlington | Lynchburg | Campbell | 724 |
| Farmville | Farmville | Prince Edward | 316 |
| Felt Knob | Hillsville | Carroll | 3,216 |
| Fincastle | Roanoke | Botetourt | 1,250 |
| Flattop triangulation station | do | Bedford-Botetourt | 4,001 |
| Floyd Mountain | Natural Bridgespecial | Botetourt | 3,149 |
| Fort Lewis Mountain | Christiansburg | Roanoke | 3,328 |
| Foster Knob | Roanoke | Bedford | 2,576 |
| Fuller Gap | Bristol | Wise | 2,305 |
| Gibson Knob | Hillsville | Carroll | 3,336 |
| Goode | Lynchburg | Bedford | 728 |
| Grassy Hill | Roanoke | Franklin | 1,968 |
| Grassy Mountain | Natural Bridge special | Botetourt-Rockbridge | 3,358 |
| Gravel Hill | Palmyra | Buckingham | 458 |
| Greens Knob | Roanoke | Bedford | 2,563 |
| Grundy | Grundy | Buchanan | 1,065 |
| Gully Mountain | Natural Bridge special | Botetourt | 3,509 |
| Hamilton Knob | Hillsville | Wythe | 3,163 |
| Hampden Sidney | Farmville | Prince Edward | 3,539 |
| Hawks Bill | Luray | Madison-Page | 4,066 |
| Hayter Knob | Abingdon | Russell-Washington | 4,200 |
| Headforemost Mountain | Roanoke | Bedford | 3,779 |
| Hickory Knob | Lewisburg | Alleghany, Va.-Greenbrier, W. Va. | 3,351 |
| Highco Mountain | Lexington | Amherst-Rockbridge | 2,880 |
| High Knob | Estillville | Wise | 4,188 |
| Do | Luray | Fauquier-Warren | 2,385 |
| High Point | Dublin | Giles | 3,910 |
| High Rock | do | Bland-Wythe | 3,837 |
| High Rocks | Wytheville | Wythe | 3,660 |
| Hillsville | Hillsville | Carroll | 2,570 |
| Humpback Mountain | Buckingham | Augusta-Albemarle | 3,645 |
| Jump Rock | Lexington | Rockbridge | 3,190 |
| Keysville | Farmville | Charlotte | 625 |
| Lebanon | Bristol | Russell | 2,131 |
| Leesburg | Harpers Ferry | Loudoun | 321 |
| Leigh Mountain | Farmville | Prince Edward | 715 |
| Lick Mountain | Lewisburg | Alleghany | 2,990 |
| Little House Mountain | Natural Bridge | Rockbridge | 3,410 |
| Lookout Mountain | Wytheville | Grayson | 4,623 |
| Lynch | Lynchburg | Campbell | 730 |
| Lynville Mountain | Roanoke | Franklin | 2,280 |
| McAfee Knob | Christiansburg | Roanoke | 3,201 |
| Macks Mountain | Hillsville | Pulaski | 3,404 |
| Marleys Top | Abingdon | Smyth | 3,290 |
| Marys Rock | Luray | Page-Rappahannock | 3,523 |
| Mason Knob | Christiansburg | Franklin-Roanoke | 3,217 |
| Max Meadows | Hillsville | Wythe | 2,028 |
| Mays Mountain | do | do | 2,949 |
| Meherrin | Farmville | Lunenburg | 589 |
| Middletown | Winchester | Frederick | 660 |
| Mills Mountain | Roanoke | Botetourt-Roanoke | 2,366 |
| Montross | Montross | Westmoreland | 138 |
| Morris Knob triangulation station | Tazewell | Tazewell | 4,510 |
| Mount Pleasant | Lexington | Amherst | 4,098 |
| Nebraska | Appomattox | Appomattox | 825 |
| Newbern | Dublin | Pulaski | 2,066 |
| New River depot | do | do | 1,757 |
| Nicholls Knob | Lewisburg | Alleghany | 3,573 |
| Nottoway | Farmville | Nottoway | 421 |
| Oldtown | Hillsville | Grayson | 2,485 |
| Onion Mountain | Roanoke | Bedford | 3,828 |
| Orebank Mountain | Natural Bridgespecial | Botetourt | 3,456 |
| Pamplin | Appomattox | Appomattox | 678 |
| Paris Mountain | Christiansburg | Montgomery | 3,040 |
| Peak Creek knob | Dublin | Pulaski | 3,374 |
| Peak triangulation station | Tazewell | Tazewell | 4,230 |
| Pilot Knob | Hillsville | Grayson | 3,021 |
| Pine Mountain | Natural Bridgespecial | Botetourt | 2,226 |
| Poor Mountain | Christiansburg | Roanoke | 3,960 |
| Pope Knob | Hillsville | Carroll | 3,039 |
| Poplar Camp Mountain | do | do | 3,161 |
| Poplar Knob | do | do | 3,166 |
| Potts Mountain | Lewisburg | Craig, Va.-Monroe, W. Va. | 3,829 |
| Purcell Knob | Antietam | Loudoun | 1,387 |
| Purcellville | Harpers Ferry | do | 553 |
| Purgatory Mountain | Natural Bridge special | Botetourt | 3,037 |
| Queensberry Knob | Hillsville | Carroll | 2,935 |
| Queens Knob | Wytheville | Wythe | 3,204 |
| Ragged Mountain | Luray | Madison | 3,398 |
| Redrock Mountain triangulation station | Abingdon | Russell-Smyth | 4,434 |

APPENDIX B.

SECONDARY ELEVATIONS.

Secondary elevations from records and topographic maps of the United States Geological Survey, including altitudes of well-known summits and other useful elevations, are given below. These elevations are approximate only and should not be used for accurate work.

| Name or locality. | Quadrangle. | County. | Elevation. |
|---|-------------------------|--|-----------------------|
| Ablers Knob..... | Christiansburg. | Montgomery..... | <i>Feet.</i> 2,838 |
| Adams Peak..... | Lexington..... | Rockbridge..... | 2,990 |
| Ad Cox Knob..... | Natural Bridge special. | Botetourt-Rockbridge. | 3,488 |
| Amelia..... | Amelia..... | Amelia..... | 358 |
| Angels Rest..... | Dublin..... | Giles..... | 3,000 |
| Apple Orchard Mountain..... | Natural Bridge special. | Bedford-Botetourt..... | 4,224 |
| Arnolds Knob..... | Christiansburg..... | Craig, Va.-Monroe, W. Va. | 3,980 |
| Ashburn..... | Seneca..... | Loudoun..... | 280 |
| Back Creek Mountain..... | Natural Bridge special. | Botetourt..... | 2,738 |
| Bald Knob..... | Dublin..... | Giles..... | 4,948 |
| Do..... | Staunton..... | Augusta..... | 4,430 |
| Bald Knob triangulation station..... | Natural Bridge..... | Bath..... | 4,248 |
| Bangs..... | Christiansburg..... | Montgomery..... | 2,000 |
| Barlett Knob..... | Hillsville..... | Carroll..... | 3,084 |
| Beamer Knob..... | do..... | do..... | 3,460 |
| Beartown Mountain..... | Abingdon..... | Russell..... | 4,604 |
| Bear Wallow triangulation station..... | Tazewell..... | Buchanan - Tazewell, Va., and McDowell, W. Va. | 3,170 |
| Bedford Springs..... | Lynchburg..... | Campbell..... | 800 |
| Berryville..... | Harpers Ferry..... | Clarke..... | 571 |
| Big Bend triangulation station..... | Pocahontas..... | Bland-Wythe..... | 4,000 |
| Big Butt..... | Grundy..... | Buchanan-Russell..... | 3,700 |
| Big House Mountain..... | Natural Bridge..... | Rockbridge..... | 3,612 |
| Big Knob..... | Estillville..... | Scott..... | 3,217 |
| Blacksburg..... | Christiansburg..... | Montgomery..... | 2,170 |
| Blackstone..... | Amelia..... | Nottoway..... | 433 |
| Bland..... | Pocahontas..... | Bland..... | 2,470 |
| Bluff Mountain..... | Lexington..... | Amherst-Rockbridge..... | 3,380 |
| Bremo Bluff..... | Palmyra..... | Fluvanna..... | 394 |
| Briar Patch Mountain..... | Wytheville..... | Grayson..... | 3,680 |
| Buck Mountain..... | Roanoke..... | Roanoke..... | 1,992 |
| Do..... | Wytheville..... | Grayson..... | 4,648 |
| Burkeville..... | Farmville..... | Nottoway..... | 538 |
| Butt Mountain..... | Dublin..... | Giles..... | 4,196 |
| Camp Mountain..... | Natural Bridge special. | Botetourt-Rockbridge..... | 3,318 |
| Cartersville..... | Palmyra..... | Cumberland..... | 263 |
| Cartmell Gap..... | Natural Bridge special. | Botetourt..... | 1,968 |
| Central..... | Dublin..... | Pulaski..... | 1,785 |
| Ceres..... | Pocahontas..... | Bland..... | 2,760 |
| Chalk Mine Mountain..... | Lexington..... | Rockbridge..... | 2,960 |
| Chester..... | Bermuda Hundred..... | Chesterfield..... | 146 |
| Chesterfield..... | Amelia..... | do..... | 208 |
| Chisel Knob..... | Hillsville..... | Carroll..... | 3,065 |
| Christiansburg..... | Christiansburg..... | Montgomery..... | 2,090 |
| Clinch Mountain..... | Pocahontas..... | Tazewell..... | 4,724 |
| Clinch triangulation station..... | Bristol..... | Washington..... | 4,223 |
| Clintwood..... | Grundy..... | Dickinson..... | 1,800 |
| Coeburn..... | Bristol..... | Wise..... | 1,961 |
| Coles Knob..... | Christiansburg..... | Floyd..... | 2,908 |
| Columbia..... | Palmyra..... | Fluvanna..... | 206 |
| Comer Rock..... | Wytheville..... | Grayson-Wythe..... | 4,113 |
| Covo Mountain..... | Natural Bridge special. | Botetourt..... | 2,073 |
| Davis Knob..... | Hillsville..... | Grayson..... | 3,020 |
| Dinwiddie..... | Amelia..... | Dinwiddie..... | 267 |
| Drummond Lake, water surface..... | Norfolk..... | Nansemond-Norfolk..... | 22 |
| Elk Garden Ridge..... | Abingdon..... | Russell..... | 3,350 |
| Elk Knob..... | Estillville..... | Lee..... | 3,343 |
| Elliott Knob triangulation station..... | Staunton..... | Augusta..... | 4,473 |

INDEX.

| | A. | Page. |
|-----------------------------|----|------------|
| Abbyville..... | | 26 |
| Abingdon..... | | 38 |
| Abingdon quadrangle..... | | 38-41 |
| Accomac County..... | | 14 |
| Accotink..... | | 59 |
| Ajax..... | | 29 |
| Alexandria..... | | 21, 22, 59 |
| Alleghany..... | | 13 |
| Alleghany County..... | | 8 |
| Alpine..... | | 34 |
| Appalachia..... | | 42 |
| Antietam quadrangle..... | | 36 |
| Archer, S. R., work of..... | | 41 |
| Arnold, C. W., work of..... | | 41 |
| Ashland..... | | 60 |

B.

| | |
|----------------------------------|---------------|
| Backbone..... | 13 |
| Bacon's Castle..... | 19 |
| Bailey..... | 45 |
| Baileys Crossroads..... | 22 |
| Baldwin, D. H., work of..... | 17 |
| Baldwin..... | 12 |
| Baron..... | 38 |
| Bassett..... | 9 |
| Battery Park..... | 16 |
| Beatrice..... | 26 |
| Bee..... | 43 |
| Belthart Mills..... | 41 |
| Ben Hur..... | 55 |
| Bench marks, description of..... | 6 |
| plate showing..... | 5 |
| Bessemer..... | 33, 34 |
| Big Stone Gap..... | 42 |
| Big Stone Gap quadrangle..... | 41-42 |
| Biggs, L. F., work of..... | 41 |
| Birchleaf..... | 47 |
| Blackford..... | 50, 56 |
| Bondtown..... | 49 |
| Bonsacks quadrangle..... | 10-11, 31 |
| Boones Mills..... | 10 |
| Botetourt County..... | 8, 31 |
| Bowling Green quadrangle..... | 58 |
| Boynton quadrangle..... | 30 |
| Braddock..... | 22 |
| Braddock Heights..... | 22 |
| Bramwell quadrangle..... | 13, 36-37, 42 |
| Broad Ford..... | 40 |
| Brooke..... | 61 |
| Brookneal..... | 30 |
| Brookneal quadrangle..... | 30 |
| Buchanan..... | 11, 34, 35 |
| Bucu..... | 44 |
| Bucu quadrangle..... | 42-44 |
| Buffalo Junction..... | 26 |
| Bull Run..... | 18, 20 |

| | Page. |
|-------------------------------|-------|
| Burke..... | 22 |
| Burkes..... | 19 |
| Burkes Garden quadrangle..... | 45 |
| Burketons..... | 12 |

C.

| | |
|---|---------------------------|
| Cahas Mountain quadrangle..... | 10, 29-30 |
| Callaghan..... | 13 |
| Callaghan quadrangle..... | 13 |
| Callands quadrangle..... | 29 |
| Campbell, N. A., work of..... | 8 |
| Campbell County..... | 25 |
| Canterton..... | 51 |
| Carolina, Clinchfield & Ohio Ry..... | 47, 49, 54 |
| Caroline County..... | 58 |
| Castlewood..... | 48 |
| Caylor..... | 50 |
| Cedar Bluff..... | 54 |
| Chain Bridge..... | 23 |
| Chantilly..... | 18 |
| Charles City quadrangle..... | 58 |
| Charlotte County..... | 25 |
| Chatham Hill..... | 40 |
| Chatham quadrangle..... | 28-29 |
| Cherrydale..... | 25 |
| Cherrydale Heights..... | 24 |
| Chesapeake & Ohio Ry..... | 8, 12, 13, 15, 16, 32, 34 |
| Chilhowie..... | 39 |
| Christie..... | 30 |
| Clark..... | 23 |
| Clarksville..... | 8, 9, 25, 26, 30 |
| Clarksville Junction..... | 26 |
| Clarksville quadrangle..... | 8-9, 25-26 |
| Clarkton..... | 27 |
| Cleveland..... | 51 |
| Clifton..... | 19 |
| Clifton Forge..... | 12 |
| Clifton Forge quadrangle..... | 12 |
| Clintwood..... | 45, 46, 48, 53 |
| Clintwood quadrangle..... | 45-48 |
| Clover..... | 27 |
| Clover quadrangle..... | 26-27 |
| Cloverdale..... | 11 |
| Cluster Springs..... | 31 |
| Coast and Geodetic Survey, elevations by..... | 58-61 |
| Coeburn..... | 49 |
| Coeburn quadrangle..... | 48-49 |
| Colley..... | 43, 44, 47 |
| Covington..... | 12, 13 |
| Craig County..... | 31 |
| Craig Valley R. R..... | 31, 33 |
| Craigs Creek quadrangle..... | 31-32 |
| Croaker..... | 14, 15 |
| Crystal Hill..... | 27 |
| Cumberland Gap..... | 37 |

| Name or locality. | Quadrangle. | County. | Elevation. |
|---|-----------------------------|------------------------------------|----------------|
| Rich Mountain..... | Hillsville..... | Carroll-Patrick..... | Feet. 3,551 |
| Rogers Mountain triangulation station, highest point in State yet determined..... | Abingdon..... | Grayson-Smyth..... | 5,719 |
| Round Hill..... | Harpers Ferry..... | Loudoun..... | 558 |
| Round Top..... | Lexington..... | Augusta-Nelson..... | 3,400 |
| Rustburg..... | Lynchburg..... | Campbell..... | 897 |
| Ryan..... | Seneca..... | Loudoun..... | 297 |
| Salem..... | Christiansburg..... | Roanoke..... | 1,006 |
| Scottsville..... | Palmyra..... | Fluvanna..... | 275 |
| Scurrl Mountain..... | Natural Bridge special..... | Botetourt..... | 2,521 |
| Sharon Springs..... | Pocahontas..... | Bland..... | 2,700 |
| Sharptop..... | Abingdon..... | Smyth..... | 4,600 |
| Short Hill..... | Antietam..... | Loudoun..... | 1,460 |
| Short Hills triangulation station..... | Natural Bridge special..... | Rockbridge..... | 2,911 |
| Sinking Creek Mountain..... | Christiansburg..... | Craig..... | 3,541 |
| Smith Mountain..... | Roanoke..... | Pittsylvania..... | 2,049 |
| Southwest Peak of Otter..... | do..... | Bedford..... | 3,675 |
| Stampingground Mountain..... | Natural Bridge special..... | Botetourt..... | 2,735 |
| Stanton River..... | Lynchburg..... | Pittsylvania..... | 580 |
| Stewarts Knob..... | Roanoke..... | Botetourt - Bedford - Roanoke..... | 2,473 |
| Stocker Knob..... | Estillville..... | Lee..... | 2,926 |
| Stony Man..... | Luray..... | Madison-Page..... | 4,081 |
| Sugarloaf Mountain triangulation station..... | Natural Bridge special..... | Botetourt..... | 3,623 |
| Taylor's Mountain..... | Roanoke..... | Bedford..... | 2,555 |
| The Knob..... | Natural Bridge special..... | Botetourt..... | 2,683 |
| The Priest..... | Lexington..... | Nelson..... | 4,080 |
| Thornton Gap..... | Luray..... | Page-Rappahannock..... | 2,279 |
| Tinker Mountain..... | Roanoke..... | Botetourt..... | 3,020 |
| Tiptop..... | Pocahontas..... | Tazewell..... | 2,758 |
| Tobacco Row triangulation station..... | Lexington..... | Amherst..... | 2,908 |
| Trammel Gap..... | Bristol..... | Dickenson-Russell..... | 2,450 |
| Twelve O'Clock Knob..... | Christiansburg..... | Roanoke..... | 2,707 |
| Weaver Knob..... | Roanoke..... | Bedford..... | 2,615 |
| Wenonah..... | Dublin..... | Giles..... | 1,560 |
| Whiterock Mountain..... | Abingdon..... | Russell-Smyth - Tazewell..... | 4,530 |
| White Rocks triangulation station..... | Jonesville..... | Lee, Va.-Harlan, Ky..... | 3,451 |
| Whitetop Mountain triangulation station..... | Abingdon..... | Grayson-Smyth..... | 5,630 |
| Wigginton Knob..... | Roanoke..... | Bedford..... | 2,461 |
| Wildcat Mountain..... | Natural Bridge special..... | Botetourt..... | 3,024 |
| Willis Mountain..... | Farmville..... | Buckingham..... | 1,150 |
| Wilson Mountain..... | Natural Bridge special..... | Rockbridge..... | 2,054 |
| Winchester..... | Winchester..... | Frederick..... | 717 |
| Winterpock..... | Amelia..... | Chesterfield..... | 307 |
| Witcher Knob..... | Hillsville..... | Carroll..... | 2,913 |
| Yellow Mountain..... | Roanoke..... | Roanoke..... | 2,191 |

INDEX.

| A. | Page. | | Page. |
|----------------------------|---------------|---|---------------------------|
| ille..... | 26 | Burke..... | 22 |
| lon..... | 38 | Burkes..... | 19 |
| lon quadrangle..... | 38-41 | Burkes Garden quadrangle..... | 45 |
| ac County..... | 14 | Burketons..... | 12 |
| ak..... | 59 | | |
| | 29 | | |
| diria..... | 21, 22, 59 | C. | |
| any..... | 13 | Cahas Mountain quadrangle..... | 10, 20-30 |
| any County..... | 8 | Callaghan..... | 13 |
| | 34 | Callaghan quadrangle..... | 13 |
| chia..... | 42 | Callands quadrangle..... | 29 |
| am quadrangle..... | 36 | Campbell, N A work of..... | 8 |
| , S. R., work of..... | 41 | Campbell County..... | 25 |
| l, C. W., work of..... | 41 | Canterton..... | 51 |
| id..... | 60 | Carolina, Clinchfield & Ohio Ry..... | 47, 49, 54 |
| | | Caroline County..... | 58 |
| B. | | Castlewood..... | 48 |
| one..... | 13 | Caylor..... | 50 |
| Castle..... | 19 | Cedar Bluff..... | 54 |
| | 45 | Chain Bridge..... | 23 |
| Crossroads..... | 22 | Chantilly..... | 18 |
| in, D. H., work of..... | 17 | Charles City quadrangle..... | 58 |
| in..... | 12 | Charlotte County..... | 25 |
| | 38 | Chatham Hill..... | 40 |
| | 9 | Chatham quadrangle..... | 25-29 |
| y Park..... | 16 | Cherrydale..... | 25 |
| se..... | 26 | Cherrydale Heights..... | 24 |
| | 43 | Cheesapeake & Ohio Ry..... | 8, 12, 13, 15, 16, 33, 34 |
| Mills..... | 41 | Chilhowie..... | 39 |
| ur..... | 55 | Christie..... | 30 |
| marks, description of..... | 6 | Clark..... | 23 |
| te showing..... | 5 | Clarksville..... | 8, 9, 25, 26, 30 |
| ter..... | 33, 34 | Clarksville Junction..... | 26 |
| me Gap..... | 42 | Clarksville quadrangle..... | 8-9, 25-26 |
| me Gap quadrangle..... | 41-42 | Clarkton..... | 27 |
| L. F., work of..... | 41 | Cleveland..... | 51 |
| af..... | 47 | Clifton..... | 19 |
| ord..... | 50, 56 | Clifton Forge..... | 12 |
| own..... | 49 | Clifton Forge quadrangle..... | 12 |
| sks quadrangle..... | 10-11, 31 | Clintwood..... | 45, 46, 48, 53 |
| Mills..... | 10 | Clintwood quadrangle..... | 45-48 |
| urt County..... | 8, 31 | Clover..... | 27 |
| ig Green quadrangle..... | 58 | Clover quadrangle..... | 26-27 |
| m quadrangle..... | 30 | Cloverdale..... | 11 |
| ck..... | 22 | Cluster Springs..... | 31 |
| ck Heights..... | 22 | Coast and Geodetic Survey, elevations by..... | 58-61 |
| ell quadrangle..... | 13, 36-37, 42 | Coeburn..... | 49 |
| Ford..... | 40 | Coeburn quadrangle..... | 48-49 |
| | 61 | Colley..... | 43, 44, 47 |
| real..... | 30 | Covington..... | 12, 13 |
| real quadrangle..... | 30 | Craig County..... | 31 |
| nan..... | 11, 34, 35 | Craig Valley R. R..... | 31, 33 |
| | 44 | Craigs Creek quadrangle..... | 31-32 |
| quadrangle..... | 42-44 | Croaker..... | 14, 15 |
| Junction..... | 26 | Crystal Hill..... | 27 |
| un..... | 18, 20 | Cumberland Gap..... | 37 |

| | Page. | | Page. |
|-------------------------------------|-------------------------------|-----------------------------|------------|
| Rennets | 28, 11 | Surry quadrangle | 34 |
| Rennets County | 8 | Swards Creek | 55 |
| Reckbridge County | 32 | Sycamore | 28 |
| Rocky Mount | 28, 39 | | |
| Rocky Mount quadrangle | 9-10 | T. | |
| Rocky Point | 34 | Tacoma | 54 |
| Rose Hill | 50 | Tandy | 44, 6 |
| Rosedale | 41 | Taylor's Valley | 39 |
| Roslyn | 23, 25 | Taylorstown | 26 |
| Roxbury | 56 | Tazewell | 45, 54 |
| Russell County | 38, 41 | Tazewell County | 13, 34, 4 |
| Rutherford | 39 | Tiny | 44 |
| | | Tip Top | 45 |
| | | Toms | 61 |
| | | Toms quadrangle | 14, 61 |
| | | Tonkas | 29 |
| | | Troutville | 11 |
| | | Tyson Crossroads | 21, 34 |
| | | | |
| | | U. | |
| | | Union Hall | 29 |
| | | | |
| | | V. | |
| | | Van Sant | 44 |
| | | Vioxy | 44, 6 |
| | | Virginia | 39 |
| | | Virginia quadrangle | 20-31 |
| | | Virginia-Carolina Ry. | 33, 39 |
| | | Virginia City | 48 |
| | | | |
| | | W. | |
| | | Waldsboro | 10 |
| | | Warwick County | 14, 34 |
| | | Washington County | 38 |
| | | Washington quadrangle | 21-25 |
| | | Watanga | 38 |
| | | Watkins | 27 |
| | | West End | 15 |
| | | West Falls Church | 26 |
| | | Wheeler | 51 |
| | | Whitemarsh | 15 |
| | | Widewater | 58, 61 |
| | | Willard | 15 |
| | | Williamsburg | 14, 16, 61 |
| | | Williamsburg quadrangle | 14-15 |
| | | Winstead, W. R., work of | 25 |
| | | Wirtz | 10 |
| | | Wise County | 41 |
| | | Wise quadrangle | 56 |
| | | Wise Terminal R. R. | 56 |
| | | Witherspoon, E. E., work of | 17 |
| | | Wittens Mill | 45 |
| | | Wolftrap | 31 |
| | | Woodbridge | 59 |
| | | Wright | 10 |
| | | | |
| | | Y. | |
| | | York County | 14, 54 |
| | | Yorktown | 15, 16 |
| | | Yorktown quadrangle | 15-16, 61 |
| | | Yongs | 54 |
| St. Asaph | 23 | | |
| St. Clair | 45 | | |
| St. Elmo | 23 | | |
| St. Paul | 48 | | |
| Salisbury | 12 | | |
| Saltpetre Cave | 11 | | |
| Saltville | 49 | | |
| Sand Lick | 47 | | |
| Sandy Level | 29 | | |
| Sassafras | 15 | | |
| Scotland | 16 | | |
| Scottsburg | 27, 31 | | |
| Sea level, mean, definition of | 6-7 | | |
| Secondary elevations | 62-64 | | |
| Seminary | 22 | | |
| Semper, C. H., work of | 8, 13 | | |
| Seneca quadrangle | 20-21 | | |
| Seneney, H. S., work of | 41, 41, 56 | | |
| Septa | 15 | | |
| Shawanee | 51 | | |
| Sideburn | 19 | | |
| Signpine | 15 | | |
| Skeggs | 43, 44 | | |
| Smithfield | 16 | | |
| Smyth County | 38 | | |
| Sneedville quadrangle | 55 | | |
| Snow Hill quadrangle | 14 | | |
| Soudan | 8 | | |
| South Boston | 31 | | |
| South Clarksville | 26 | | |
| Southern Ry | 8, 22, 26, 27, 28, 29, 30, 31 | | |
| Springfield (Washington quadrangle) | 22 | | |
| Springfield (Yorktown quadrangle) | 15, 16 | | |
| Springwood | 11, 32 | | |
| Stafford County | 58 | | |
| Stafford quadrangle | 61 | | |
| Starkey | 10 | | |
| Sterling | 18, 20 | | |
| Stonehouse | 20 | | |
| Stratton | 46 | | |
| Strom | 34 | | |
| Summit | 58, 61 | | |
| Surber | 34 | | |
| Surry County | 14 | | |

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

BULLETIN 563

RESULTS OF SPIRIT LEVELING
IN MARYLAND

1896 TO 1911, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER

Work done in cooperation with the State through the Maryland Geological Survey
William Bullock Clark, State Geologist



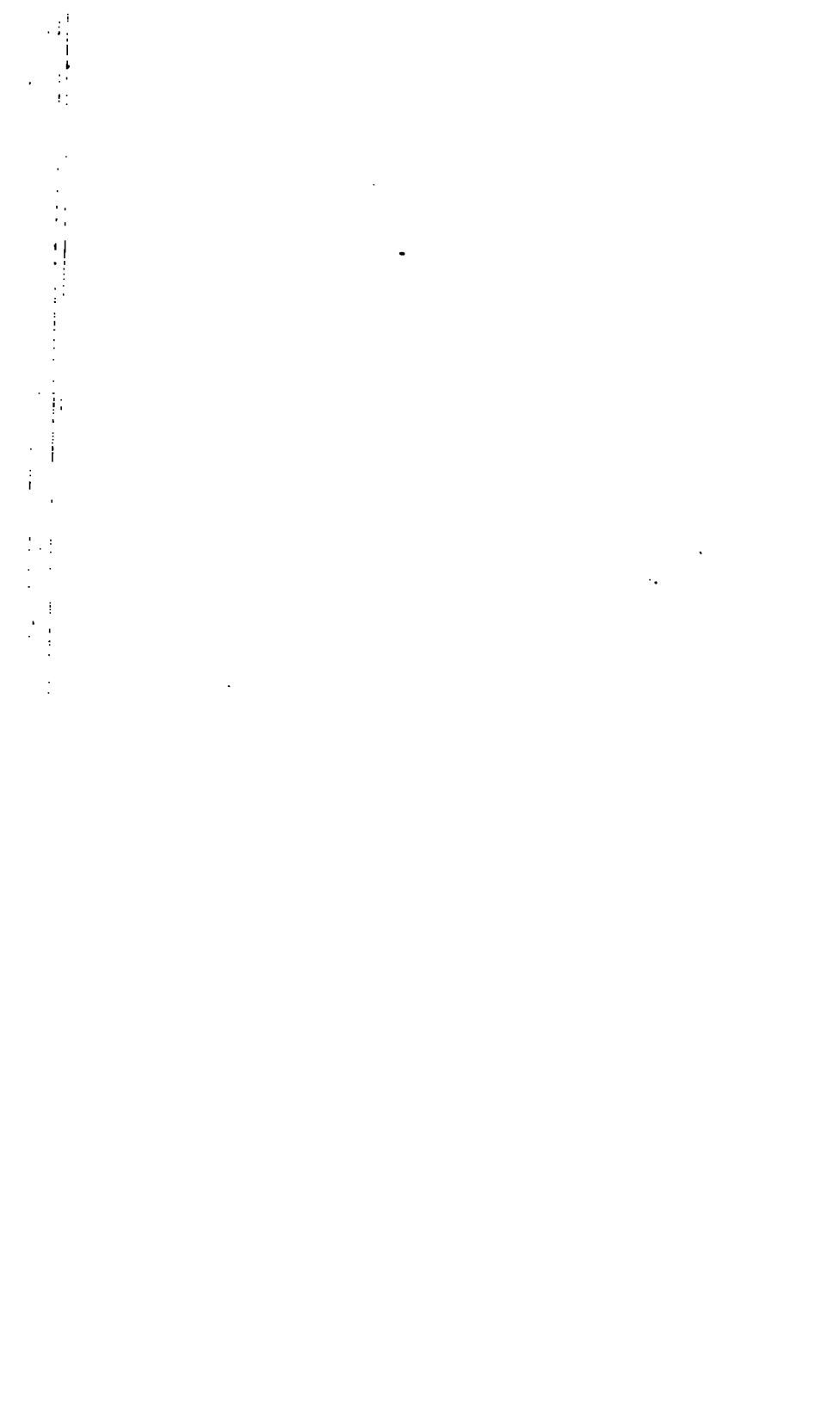
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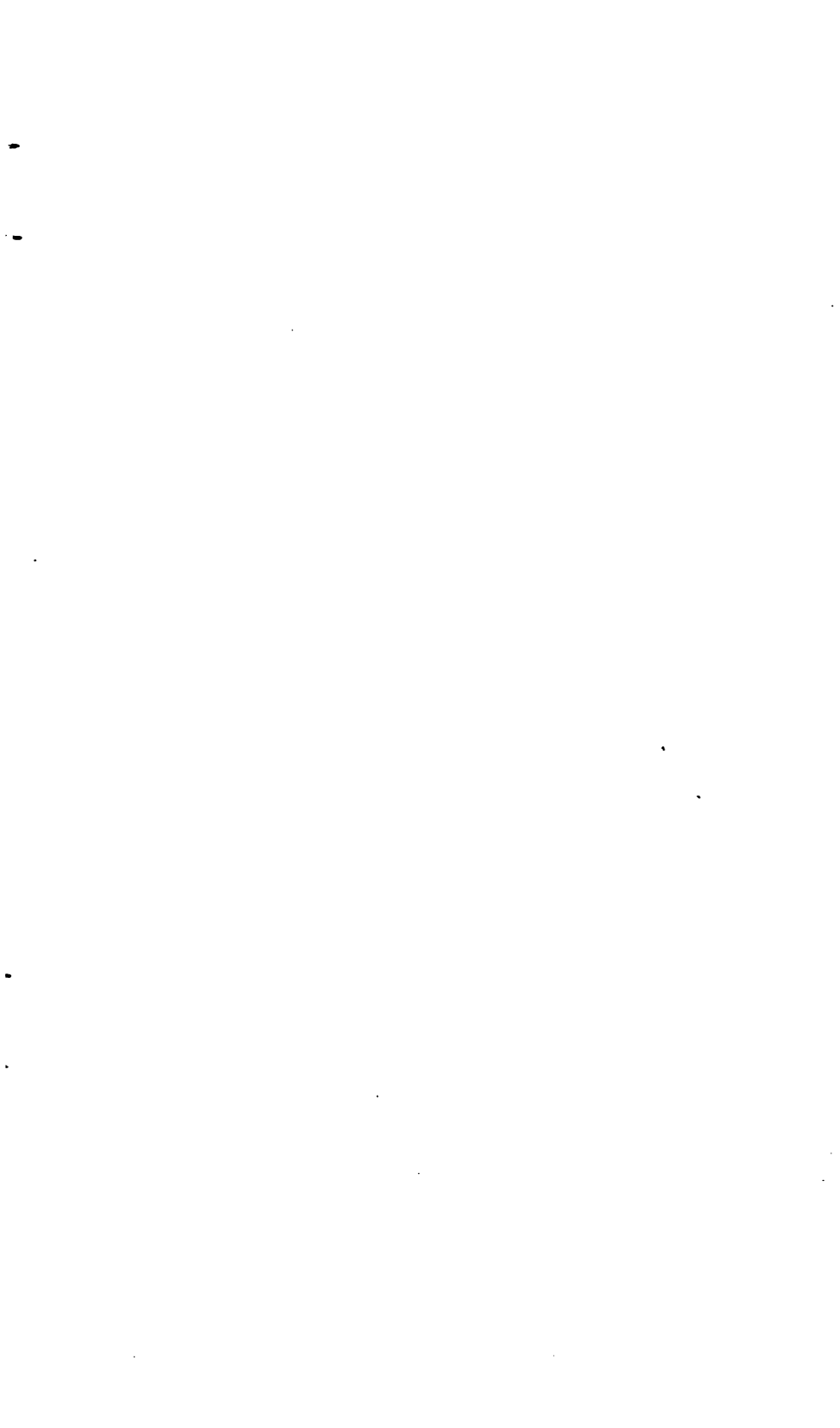
CONTENTS.

| | Page. |
|--|-------|
| Introduction..... | 5 |
| Cooperation..... | 5 |
| Previous publication..... | 5 |
| Personnel..... | 5 |
| Classification..... | 5 |
| Bench marks..... | 6 |
| Datum..... | 6 |
| Topographic maps..... | 7 |
| Precise leveling..... | 8 |
| Washington quadrangle (Montgomery County)..... | 8 |
| Primary leveling..... | 10 |
| Barclay, Betterton, Cecilton, Chestertown, Choptank (30'), Crapo, Crisfield, Deal Island, Denton, Dover (30'), Drum Point, Harrington, Hurlock, Nanticoke, Ocean City, Oxford, Pittsville, Princess Anne, Salisbury, Seaford, Snow Hill, St. Michaels, and Tolchester (30') quadrangles (Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester counties)..... | 10 |
| Belair, Elkton, Havre de Grace, and Parkton quadrangles (Baltimore, Cecil, and Harford counties)..... | 17 |
| Annapolis, Baltimore, Ellicott, Laurel, Relay, and Westminster quadrangles (Anne Arundel, Baltimore, Carroll, and Prince Georges counties)..... | 20 |
| Washington quadrangle (Montgomery County)..... | 24 |
| Washington quadrangle (Prince Georges County)..... | 25 |
| Indianhead, Nanjemoy, and Stafford quadrangles (Charles and Prince Georges counties)..... | 26 |
| Ijamesville, Mount Airy, Rockville, and Seneca quadrangles (Frederick, Howard, and Montgomery counties)..... | 29 |
| Antietam and Martinsburg quadrangles (Frederick and Washington counties)..... | 32 |
| Emmitsburg, Hagerstown, Taneytown, and Williamsport quadrangles (Carroll, Frederick, and Washington counties)..... | 35 |
| Accident, Flintstone, Frostburg, Grantsville, Hancock, Oakland, and Pawpaw quadrangles (Allegany, Garrett, and Washington counties).... | 42 |
| Appendix A: Elevations adjusted by the Coast and Geodetic Survey from precise leveling..... | 47 |
| Appendix B: Secondary elevations..... | 72 |
| Index..... | 75 |

ILLUSTRATION.

| | Page. |
|---|-------|
| PLATE I. Geological Survey bench marks..... | 5 |







GEOLOGICAL SURVEY BENCH MARKS.

A, Tablet used in cooperating States. The State name is inserted at *G*.
B and *D*, Copper temporary bench mark, consisting of a nail and copper washer.
A, *C*, and *E*, Tablets for stone or concrete structures.
F, Iron post used where there is no rock.

RESULTS OF SPIRIT LEVELING IN MARYLAND, 1896 TO 1911, INCLUSIVE.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Cooperation.—The State of Maryland contributed financially to the work from 1896 to 1911, inclusive. The State is now completely mapped and bench marks have been established in every county except Calvert and St. Marys.

Previous publication.—That part of the results of spirit leveling in Maryland previously published in Bulletin 434 (which comprised descriptions and elevations of bench marks established in Delaware, District of Columbia, Maryland, and Virginia, 1896 to 1909, inclusive, based on the 1903 adjustment) has been corrected to agree with the 1907 adjustment of precise leveling of the Coast and Geodetic Survey and is here republished together with results of spirit leveling by the United States Geological Survey in Maryland since 1909. The elevations by the 1907 adjustment were not changed by the 1912 adjustment and are not likely to be changed by any future adjustment of the level net.

Personnel.—The field work from 1896 to 1906, inclusive, was done under the direction of H. M. Wilson, geographer, and that from 1907 to 1911, inclusive, was done under Frank Sutton, geographer. The work since January, 1908, was done under the general direction of R. B. Marshall, chief geographer. Credit is given to the respective levelmen in the headings of the several lists. The office work of computation, adjustment, and preparation of lists was done mainly by S. S. Gannett, geographer, under the general direction of E. M. Douglas, geographer.

Classification.—The elevations are classified as precise or primary, according to the methods employed in their determination. The former are determined by lines of levels run either in both forward and backward directions or by simultaneous double-rodged lines, a high-grade instrument being used and special precautions being taken in observations and reduction to correct errors and make the line continuously good throughout. The latter or primary levels are determined with the Y level, precautions being taken against only the principal errors and the levels being run mostly in circuits of single

lines. The allowable limit of error observed on the precise work already done by the Geological Survey in this State is represented in feet by $0.02 \sqrt{D}$ and that for the primary work by $0.05 \sqrt{D}$, in which D is the length of the circuit in miles.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (*C* and *E*, Pl. I), $3\frac{1}{2}$ inches in diameter and $\frac{1}{4}$ inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (*F*, Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post $3\frac{1}{2}$ inches in outer diameter and $\frac{1}{2}$ feet in length, which is set about 3 feet in the ground. The bottom is spread out to a width of 10 inches in order to give a firm bearing in the earth, and a bronze or aluminum-bronze cap is riveted upon the top of the post. A third style of bench mark, with abbreviated lettering (*B* and *D*, Pl. I), is used for unimportant points. This consists of a special copper nail $1\frac{1}{2}$ inches in length driven through a copper washer $\frac{3}{8}$ inch in diameter. The tablets as well as the caps on the iron posts are appropriately lettered, and cooperation by a State is indicated by the addition of the State name (*G*, Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot as determined by the levelman. These numbers are stamped with $\frac{1}{8}$ -inch steel dies on the tablets or post caps, to the left of the word "Feet." The office adjustment of the notes and the reduction to mean sea level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey, at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of winds and tides were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions, such as long, narrow bays, rivers, and like features, will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and

if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea levels determined from observations in the Atlantic Ocean, the Gulf of Mexico, and the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "Datum" on tablets or posts. For these areas corrections for published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

Topographic maps.—Maps of the following quadrangles, wholly or partly in Maryland, have been published by the United States Geological Survey up to June 1, 1914. They may be obtained, except as noted, for 10 cents each or \$3 for 50 on application to the Director of the Survey at Washington, D. C.:

Accident (Md.-W. Va.-Pa.).

Annapolis.¹

Antietam (Md.-Va.-W. Va.).²

Baltimore.³

Barclay (Md.-Del.).⁴

Belair (Md.-Pa.).

Betterton.⁵

Bloodworth Island.⁶

Brandywine.⁷

Cecilton (Md.-Del.).⁴

Chestertown.⁵

Choptank.¹

Crapo.⁶

Crisfield (Md.-Va.).

Deal Island.

Denton.

Dover (Del.-Md.-N. J.).⁴

Drum Point.⁶

East Washington (Md.-D. C.).^{1}

Elkton (Md.-Del.-Pa.).

Ellicott.⁸

Emmitsburg (Md.-Pa.).

Flintstone (Md.-W. Va.-Pa.).

*Frederick (Md.-Va.).⁹

Fredericksburg (Va.-Md.).

Frostburg (Md.-W. Va.-Pa.).

Grantsville (Md.-Pa.).

Green Run (Md.-Va.)

Gunpowder.⁵

Hagerstown (Md.-Pa.).

Hancock (W. Va.-Md.-Pa.).

Harpers Ferry (Va.-W. Va.-Md.).³

Havre de Grace (Md.-Pa.).

Hurlock.

Ijamsville.⁸

Indian Head.

* Out of print.

¹ Annapolis, Oxford, St. Michaels, and Sharps Island sheets, on scale of 1:62500, have been reduced and form Choptank sheet, on scale of 1:125000.

² Antietam sheet shows part of Harpers Ferry quadrangle on larger scale.

³ Baltimore, Ellicott, Laurel, and Relay sheets, on scale of 1:62500, have been reduced and form Patapsco sheet, on scale of 1:125000.

⁴ Barclay and Cecilton sheets show parts of Dover quadrangle on larger scale.

⁵ Betterton, Chestertown, Gunpowder, and North Point sheets, on scale of 1:62500, have been reduced and form Tolchester sheet, on scale of 1:125000.

⁶ Bloodworth Island, Crapo, Drum Point, and Point Lookout sheets show St. Marys quadrangle on larger scale.

⁷ Brandywine, the east half of Washington, Owensville, and Prince Frederick sheets, on scale of 1:62500, have been reduced and form Patuxent sheet, on scale of 1:125000.

⁸ Washington sheet shows the same area as East Washington and West Washington sheets.

⁹ Ijamsville, Mount Airy, Rockville, and Seneca sheets show Frederick quadrangle on larger scale.

| | |
|--|---|
| Laurel. ¹ | Point Lookout (Md.-Va.). ⁹ |
| Leonardtown. ² | Prince Frederick. ⁷ |
| Montross (Va.-Md.). ³ | Princess Anne (Md.-Va.). |
| Mount Alry. ³ | Relay. ¹ |
| Mount Vernon (Va.-Md.-D. C.). ⁴ | Rockville (Md.-Va.). ⁵ |
| Nanjemoy. | Romney (W. Va.-Va.-Md.). |
| Nanticoke. | Salisbury (Md.-Del.). |
| Nomini (Md.-Va.). ³ | St. Marys (Md.-Va.). ⁹ |
| North Point. ¹ | St. Michaels. ⁸ |
| Oakland (Md.-W. Va.). ⁶ | Seneca (Md.-Va.). ⁵ |
| Ocean City (Md.-Del.). | Sharps Island. ⁹ |
| Owensville. ⁷ | Snow Hill (Md.-Va.). |
| Oxford. ⁸ | Taneytown (Md.-Pa.). |
| Parkton (Md.-Pa.). | Tolchester. ⁵ |
| Patapsco. ¹ | Washington (Md.-D. C.-Va.), double sheet. ^{11 12} 20 cents. |
| Patuxent (Md.-D. C.). ⁷ | Westminster (Md.-Pa.). |
| Pawpaw (Md.-W. Va.-Pa.). | *West Washington (Md.-D. C.-Va.). ¹³ |
| Piedmont (W. Va.-Md.). ⁶ | Wicomico (Md.-Va.). ² |
| Piney Point (Md.-Va.). ³ | Williamsport (Md.-Pa.-W. Va.). |
| Pittsville (Md.-Del.). | |

PRECISE LEVELING.

Washington quadrangle.

[Latitude 38° 45'–39°; longitude 76° 45'–77° 15'.]

MONTGOMERY COUNTY.

The elevations in the following list were determined by precise leveling and are based upon the elevation of bench mark "F" at Great Falls, Md., determined by precise leveling of the Coast and Geodetic Survey.

The work was done in November, 1910, by D. H. Baldwin.

* Out of print.

¹ Baltimore, Ellicott, Laurel, and Relay sheets, on scale of 1:62500, have been reduced and form Patapsco sheet, on scale of 1:125000.

² Leonardtown, Montross, Piney Point, and Wicomico sheets, on scale of 1:62500, have been reduced and form Nomini sheet, on scale of 1:125000.

³ Ijamsville, Mount Alry, Rockville, and Seneca sheets show Frederick quadrangle on larger scale.

⁴ The west half of Washington sheet shows part of Mount Vernon quadrangle on larger scale.

⁵ Betterton, Chestertown, Gunpowder, and North Point sheets, on scale of 1:62500, have been reduced and form Tolchester sheet, on scale of 1:125000.

⁶ Oakland sheet shows part of Piedmont quadrangle on larger scale.



⁷ Brandywine, the east half of Washington, Owensville, and Prince Frederick sheets, on scale of 1:62500, have been reduced and form Patuxent sheet, on scale of 1:125000.

⁸ Annapolis, Oxford, St. Michaels, and Sharps Island sheets, on scale of 1:62500, have been reduced and form Choptank sheet, on scale of 1:125000.

⁹ Bloodsworth Island, Crapo, Drum Point, and Point Lookout sheets show St. Marys quadrangle on larger scale.

¹⁰ Washington sheet shows the same area as East Washington and West Washington sheets.

From Great Falls southeast along Chesapeake & Ohio Canal to Lock 8, near Cabin John Bridge.

| | |
|---|------------------|
| Great Falls, near Lock 20, east side of spillway of dam, on top of parapet wall, between crane and gage rod; the surface within a chiseled angle (U. S. C. E. Intake b. m. 156.445)----- | Feet. 157.533 |
| Great Falls, 155-foot mark on gage----- | 156.14 |
| Great Falls, crest of dam near spillway (U. S. C. E. elevation 150.5)----- | 151.75 |
| Great Falls, east end of dam, on northwest corner of next to top step of parapet wall; chiseled angle (U. S. C. E. b. m.)----- | 155.246 |
| Great Falls, west wall of Lock 20, 0.2 meter west of edge and 1.65 meters south of north gate; bottom of a square cut  (C. & G. S. b. m. F)----- | 166.592 |
| Great Falls, southwest corner of gate house, on projecting foundation stone, 1.2 feet south of southwest corner of water table; bronze tablet stamped "Prim. Trav. Sta. No. 1, 171"----- | 171.146 |
| Great Falls, west entrance to gate house; chiseled angle (U. S. C. E. elevation 171.26)----- | 172.353 |
| Lock 19, on west wall, 2 feet north of south end and about 5 feet east of west side of south end; chiseled cross painted "159"----- | 158.620 |
| Lock 18, in top of west wall, at south end; end of broken tie bolt with "A" cut alongside, painted "150"----- | 149.672 |
| Lock 17, in top of west wall, southwest corner of south end; chiseled square painted "142"----- | 141.640 |
| Gateway between Locks 16 and 17, on west wall; shallow drill hole, painted "135"----- | 135.435 |
| Locks 16 and 17, gateway between, on west wall; bottom of chiseled square  ----- | 135.519 |
| Lock 16, top of west wall, at south end, 2.25 feet north by 6.75 feet east of southwest corner; chiseled cross painted "134"----- | 133.509 |
| Lock 15, on top of west wall, at south end, 2 feet 1 inch north by 3 feet 8 inches east of southwest corner; chiseled cross painted "126"----- | 125.577 |
| Lock 15, 380 feet south of, west of towpath, on rock; chiseled square marked "120"----- | 120.461 |
| Lock 15, 0.6 mile south of, 240 feet south of center of bridge over spillway, west of towpath, on ledge; chiseled triangle painted "121"----- | 120.617 |
| Lock 15, 1 mile south of, west of towpath, at bend in canal, on ledge; chiseled square painted "119"----- | 119.339 |
| Milepost 11, west of towpath; marked point on top, painted "119"----- | 119.030 |
| Milepost 11, 0.8 mile south of, west of towpath, on root of water willow; copper nail, tree is blazed and scribed "U. S. G. S. b. m. 120"----- | 119.914 |
| Milepost 10, south of towpath; marked point on top, painted "119"----- | 119.020 |
| Milepost 10, 1,813 feet south of, under surface of slab over floodgate----- | 117.826 |
| Lock 14, on north wall, on north stone of east end; bronze tablet stamped "117" (Prim. Trav. Sta. No. 2)----- | 117.374 |
| Lock 13, on south wall, 1 foot from southeast corner of east end; chiseled square painted "109"----- | 109.254 |
| Lock 12, on southwest wall, 2 feet northwest of southeast end and 4 feet northeast of southwest end; adjacent surface to chiseled cross, painted "102"----- | 101.574 |
| Lock 11, on south wall, 2 feet west of east edge, 3 feet north of south edge; adjacent surface to chiseled cross, painted "93"----- | 93.454 |
| Lock 10, on south wall, near east end; chiseled cross painted "85"----- | 85.268 |

| | |
|---|-----------------|
| Lock 9, on south wall, near east end, 2 feet west by 3 feet north of southeast corner; chiseled cross painted "77"----- | Feet. 77.480 |
| Lock 8, on north wall, on north capstone of east end; bronze tablet stamped "69" (Prim. Trav. Sta. No. 3)----- | 69.034 |

PRIMARY LEVELING.

Barclay, Betterton, Cecilton, Chestertown, Choctank (30'), Crapo, Crisfield, Deal Island, Denton, Dover (30'), Drum Point, Harrington, Hurlock, Nanticoke, Ocean City, Oxford, Pittsville, Princess Anne, Salisbury, Seaford, Snow Hill, St. Michaels, and Telehester (30') quadrangles.

CAROLINE, CECIL, BORCHESTER, KENT, QUEEN ANNES, SOMERSET, TALBOT, WICOMICO, AND WORCESTER COUNTIES.

The elevations in the following list are based on heights derived by various gages of the Coast and Geodetic Survey and on checked levels of the Pennsylvania Railroad plus 0.64 foot, a mean correction derived through United States Geological Survey connections. For additional elevations in Dover, Harrington, and Seaford quadrangles see Delaware list (pp. 9, 10) bulletin 434; and for Franklin City, Va., in Snow Hill quadrangle, see Virginia list (p. 52) in same bulletin.

The leveling was done as follows: Cecilton and Barclay quadrangles, in 1896 by Charles Goldsborough and O. L. Pettibone; Barclay quadrangle additional work, in 1899 by T. D. Leonard and in 1904 by Ralph Hutchins; Betterton, Chestertown, and St. Michaels quadrangles, in 1899 by T. D. Leonard; Hurlock quadrangle, in 1899 by Leonard, in 1900 by George Bailey, and in 1904 by C. A. Clunet; Seaford quadrangle, in 1899 by Leonard and in 1904 by Clunet, in 1911 by J. H. Lefeaver, and in 1912 by J. M. Whitman; Denton and Harrington quadrangles, in 1899 by Leonard and in 1904 by B. J. Green; Oxford quadrangle, in 1900 by Bailey and J. W. Hodges, in 1902 by W. C. Palmer, and in 1904 by Clunet; Crapo quadrangle, in 1900 by Hodges and in 1904 by Clunet; Drum Point quadrangle, in 1904, by Clunet; Nanticoke quadrangle, in 1900, by Hodges, and in 1902 by Palmer; Salisbury, Princess Anne, and Pittsville quadrangles, in 1900 by Hodges and C. H. Semper; Crisfield and Deal Island quadrangles, in 1900 by Semper; Snow Hill and Ocean quadrangles, in 1900 by Hodges.

CECILTON (DOVER 30') QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 75° 45'–76°.]

From Chesapeake City southwest via Cayots Corners to Earleville, thence south and west to Locust Grove.

| | |
|--|-----------------|
| Cayots Corners, at road forks; iron post stamped "83"----- | Feet. 83.612 |
| Earleville, in stone in front of S. Duhamel's store; bronze tablet stamped "85"----- | 85.283 |

| | |
|--|----------------|
| Fredericktown, bridge over Sassafras River; in face of northwest wing wall; bronze tablet stamped "5"----- | Feet. 5.460 |
| Locust Grove, 40 feet north of crossroads and east side of Beaton's house; iron post stamped "76"----- | 77.075 |

From Locust Grove south to Chesterville.

| | |
|--|--------|
| Blacks station, in front of store, on stone foundation of middle pillar of porch; highest point----- | 70.26 |
| Chesterville, north corner of crossroads, at corner of brick storehouse; iron post stamped "55"----- | 55.829 |

From Millington north along Philadelphia, Baltimore & Washington R. R. and highways to Bohemia Mills.

| | |
|--|--------|
| Millington, northwest corner of Cypress and Sassafras streets, in doorsill of store; copper plug stamped "26"----- | 27.120 |
| Massey, northwest corner of crossroads, in southeast corner of foundation of Walsberger's store; bronze tablet stamped "65"----- | 65.770 |
| Massey, 3.5 miles east of, at Maryland-Delaware State line; top of boundary stone----- | 68.10 |
| Sassafras, dwelling of Mr. Earnest; copper plug in step to back porch, stamped "U.S.G.S. b. m. 34"----- | 34.791 |

BARCLAY (DOVER 30') QUADRANGLE.

[Latitude 39°-39° 15'; longitude 75° 45'-76°.]

From Chesterville south to Benson Center, thence east to Sudlersville, thence north to Millington.

| | |
|---|--------|
| Benton Corners, 1,000 feet west of, in northeast corner of foundation stone of farmhouse; bronze tablet stamped "60"----- | 60.911 |
| Barclay, 1.5 miles north of, 50 feet west of railroad crossing, southwest corner of road; top of large stone----- | 69.85 |
| Sudlersville, corner of Church and Main streets, northeast corner of stone foundation; bronze tablet stamped "66"----- | 66.798 |

From Barclay southwest to Roberts, thence southeast to Goldsboro, thence northeast to Marydel.

| | |
|---|--------|
| Roberts, at southeast corner of Scott's store; iron post stamped "78"----- | 78.469 |
| Ingleside, southwest corner of Beatty's yard; iron post stamped "62"----- | 62.410 |
| Hollingsworth, south corner of crossroads, outside of corner of garden fence; iron post stamped "66"----- | 66.954 |
| Goldsboro, on east corner of railroad station; bronze tablet stamped "63"----- | 63.548 |
| Marydel, south end of freight house; bronze tablet stamped "63" (reset 2 feet lower). | |

From Crumpton southwest to McGinnes.

| | |
|---|--------|
| McGinnes, 2.9 miles southwest of Crumpton, southeast corner of crossroads, 50 feet east of store, in northwest corner of Williams's yard; iron post stamped "72, 1904"----- | 72.381 |
|---|--------|

From Sudlersville east 4 miles.

| | |
|--|--------|
| Peters Corners, 3.8 miles east of Sudlersville, northwest corner of crossroads, in base of chimney of private house; aluminum tablet stamped "66, 1904"----- | 66.108 |
|--|--------|

BETTERTON (TOLCHESTER 30') QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 76°–76° 15'.]

From Locust Grove west to Stillpond, thence southwest to Fairlee.

| | |
|--|-----------------|
| Stillpond, at east side of F. H. Harper's store; iron post stamped "79 Balto"----- | Feet. 78.813 |
| Hanesville, at road west, in front of post office; iron post stamped "62 Balto"----- | 62.167 |

CHESTERTOWN (TOLCHESTER 30') QUADRANGLE.

[Latitude 39°–39° 15'; longitude 76°–76° 15'.]

From Fairlee southeast via Chestertown and Starkley Corner to Roberts.

| | |
|---|--------|
| Fairlee, 60 feet east of S. D. Seaverton's boot and shoe shop, in large rock; aluminum tablet stamped "78 Balto"----- | 78.543 |
| Chestertown courthouse; aluminum tablet stamped "22 Balto"----- | 21.918 |
| Starkley Corner, at northeast corner of crossroads; iron post stamped "54 Balto"----- | 54.794 |

From Fairlee south to Edesville, thence southeast to Centerville, thence east to Roberts.

| | |
|---|--------|
| Edesville, just south of entrance to store of W. L. Sutton; iron post stamped "24 Balto"----- | 24.805 |
| Hadaway's store, northeast of entrance, just under window; iron post stamped "18 Balto"----- | 18.738 |
| Centerville, in southeast corner of courthouse yard, across path from State survey meridian monument; iron post stamped "60 Balto"----- | 60.70 |

ST. MICHAELS (CHOPTANK 30') QUADRANGLE.

[Latitude 38° 45'–39°; longitude 76°–76° 15'.]

From Centerville south to Easton, thence east to Tanyard.

| | |
|---|--------|
| Wye Mills, corner of Anthony's store, at the end of piazza; iron post stamped "21 Balto"----- | 22.121 |
| Longwoods, at northeast corner of Callahan's store; iron post stamped "50 Balto"----- | 51.249 |
| Easton, at south end of second step of courthouse; aluminum tablet stamped "37 Balto"----- | 37.545 |

OXFORD (CHOPTANK 30') QUADRANGLE.

[Latitude 38° 30'–38° 45'; longitude 76°–76° 15'.]

From Easton south to Trappe.

| | |
|---|--------|
| Trappe, corner of Easton Road and West Street, southeast corner of store of Clark & Kirby, in foundation stone; aluminum tablet stamped "55"----- | 54.746 |
|---|--------|

From Aireys northwest to Cambridge, thence southeast to Bucktown.

| | |
|--|--------|
| Cambridge, in southwest corner of courthouse, about 1 foot above ground; bronze tablet stamped "19 Balto"----- | 20.160 |
|--|--------|

From Smithville northeast to Milton, thence southeast to Little Blackwater River.

| | |
|---|-------|
| Milton (Woolford post office), north of road opposite road fork to Gum Swamp, in front yard of Baptist Church; iron post stamped "6 Adj"----- | 5.622 |
|---|-------|

DENTON QUADRANGLE.

[Latitude 38° 45'–39°; longitude 75° 45'–76°.]

From Goldsboro southwest along Pennsylvania R. R. to Queen Anne, thence south along highway to Griffin, thence east to Hobbs.

| | |
|---|-----------------|
| Greensboro, 10 feet north of station, at edge of platform; iron post stamped "40 Balto"----- | Feet. 40.817 |
| Ridgely, in lawn at northeast corner of Pennsylvania R. R. station, 4 feet from platform; iron post stamped "69 Adj. 1903"----- | 69.070 |
| Hillsboro, at northeast corner of H. Williams's dwelling, on north foundation wall; aluminum tablet stamped "47 Adj. 1903"----- | 46.599 |
| Griffin, at northeast corner of yard to W. H. Robinson's dwelling; iron post stamped "42 Adj. 1903"----- | 41.376 |
| Denton, in courthouse yard, on top of south meridian post; bronze tablet----- | 37.916 |
| Denton, on southeast corner of courthouse; aluminum tablet stamped "43 Adj. 1903"----- | 42.703 |

From Hobbs southwest along highway to Tanyard.

| | |
|---|--------|
| Williston, 30 feet east of southeast corner of store; iron post stamped "24 Adj. 1903"----- | 24.209 |
|---|--------|

From Tanyard east along highway to American Corners, thence north to Hobbs.

| | |
|--|--------|
| Tanyard, 1.5 miles west of, west end of Dover Bridge, at west end of C. H. Sinclair's house, north of road; iron post stamped "4 Balto"----- | 4.789 |
| Newton, 50 feet east of store, at corner of crossroads; iron post stamped "40 Adj. 1903"----- | 39.678 |
| Fowling Creek, in yard to W. H. Collins's dwelling, 50 feet west of M. E. Church; iron post stamped "48 Adj. 1903"----- | 48.567 |
| American Corners, at crossroads, in corner of field in front of store; iron post stamped "55 Adj. 1903"----- | 55.107 |
| Concord, 10 feet north of store, at southeast corner of yard to C. E. Todd's dwelling; iron post stamped "55 Adj. 1903"----- | 55.723 |
| Hobbs, in southwest corner of yard to H. C. Hobbs's dwelling, 50 feet northeast of Hobbs station; iron post stamped "55 Adj. 1903"----- | 54.914 |

HARRINGTON QUADRANGLE.

[Latitude 38° 45'–39°; longitude 75° 30'–75° 45'.]

From Hobbs north along highways via Burrsville and Whiteleysburg to Greensboro.

| | |
|---|--------|
| Burrsville, 500 feet north of forks of road east, west of street in front of William Outtens's blacksmith shop; iron post stamped "58 Adj. 1903"----- | 58.545 |
| Whiteleysburg, at northeast corner of Anthony's store; iron post stamped "63 Balto"----- | 63.175 |

HURLOCK QUADRANGLE.

[Latitude 38° 30'–38° 45'; longitude 75° 45'–76°.]

From Tanyard southeast to Federalsburg, thence southwest to Williamsburg, thence south to Rhodesdale, thence southwest to Linkwood.

| | |
|--|--------|
| Linchester, at west side of J. F. Tegar's store; iron post stamped "18 Balto"----- | 18.783 |
| Federalsburg, at T. O. Jefferson's store; iron post stamped "10 Balto"----- | 10.621 |
| Linkwood, in grass plat at intersection of roads at station; iron post stamped "21 Balto"----- | 22.234 |

From Rhodesdale southeast to Brookview, thence north to Eldorado, thence east to Galestown.

| | |
|--|-----------------|
| Rhodesdale, at northwest corner of post office; iron post stamped "40 Adj"----- | Feet. 40.619 |
| Brookview, at southeast corner of W. D. Murphy's store, 300 feet west of Marshyhope Creek; iron post stamped "24 Adj"----- | 24.105 |

SEAFORD QUADRANGLE.

[Latitude 38° 30'–38° 45'; longitude 75° 30'–75° 45'.]

From State line near Oak Grove, Del., southwest along highways to Reliance, thence southeast to State line.

| | |
|--|-------|
| Oak Grove, 1.1 miles south of, 10 feet east of highway, in root of cedar tree; nail marked "46"----- | 45.88 |
| Winwright School, in front of, in root of tree; nail marked "41"----- | 40.85 |
| Winwright School, 0.1 mile south of, at crossroads, in root of oak tree; nail marked "38"----- | 38.08 |

From Galestown north via Oak Grove to Federalsburg.

| | |
|---|--------|
| Reliance, 1 mile south of, on top of Delaware-Maryland State line monument; cross mark----- | 42.94 |
| Reliance, at northeast corner of crossroads, at southwest corner of Mrs. Phillips's house, opposite former post office; iron post stamped "45 Adj"----- | 45.094 |
| Oak Grove, 0.25 mile west of, on top of Delaware-Maryland State line monument, 10 feet north of railroad; cross mark----- | 47.75 |
| Oak Grove, in front of station; top of rail----- | 46.4 |

ORAPO QUADRANGLE.

[Latitude 38° 15'–38° 30'; longitude 76°–76° 15'.]

From Bucktown southeast to Bestpitch.

| | |
|---|-------|
| Bucktown, in brick foundation at southwest corner of former post office; iron post stamped "4 Balto"----- | 5.310 |
|---|-------|

From Bucktown southwest to Golden Hill.

| | |
|---|-------|
| Bucktown, 4.5 miles west of, at southeast corner of road forks, 7 feet south of letter-box post of W. T. Elzy; iron post stamped "7 Adj"----- | 6.739 |
| Gum Swamp, north of road, at wood-road fork north, opposite church and schoolhouse; iron post stamped "3 Adj"----- | 3.321 |
| Golden Hill, at road fork at Louis Keene's store; iron post stamped "3 Adj"----- | 2.812 |

From Golden Hill southeast to Wingate.

| | |
|--|-------|
| Lakesville, 0.5 mile north of, 150 feet south of Nazareth M. E. Church, in northeast corner of schoolhouse foundation; bronze tablet stamped "3 Adj"----- | 2.589 |
| Wingate, at junction of roads 100 yards north of post office, at southeast corner of road, just outside of fence in front of Mr. Wingate's house; iron post stamped "3 Adj"----- | 2.828 |

DRUM POINT QUADRANGLE.

[Latitude 38° 15'–38° 30'; longitude 76° 15'–76° 30'.]

From Golden Hill northwest to Smithville.

| | |
|--|-------|
| Smithville, east of road in front of schoolhouse; iron post stamped "0 Adj"----- | 5.986 |
|--|-------|

NANTICOKE QUADRANGLE.

[Latitude 38° 15'–38° 30'; longitude 75° 45'–76°.]

From Bestpitch east via Drawbridge to Quantico.

| | |
|--|----------------|
| Drawbridge, in brick foundation on south side of small store; bronze tablet stamped "3 Balto"----- | Feet. 4.130 |
|--|----------------|

From Rhodesdale south to Vienna, thence southeast via Mardela Springs to Quantico.

| | |
|--|--------|
| Vienna, in northwest face near north corner of brick house owned in 1902 by S. G. LeCompte, 60 feet southwest of road, 180 feet northwest of Nanticoke River, in foundation; bronze tablet stamped "14"----- | 14.288 |
|--|--------|

| | |
|---|--------|
| Mardela Springs, 15 feet east of post-office building, 30 feet south of road, in grounds of J. L. Langdale; iron post stamped "27"----- | 26.685 |
|---|--------|

From Quantico south-southwest to Whitehaven, thence east to Loretto.

| | |
|---|-------|
| Whitehaven, southwest side of house owned in 1902 by William Dolby, in brick foundation; bronze tablet stamped "5"----- | 4.576 |
|---|-------|

SALISBURY QUADRANGLE.

[Latitude 38° 15'–38° 30'; longitude 75° 30'–75° 45'.]

From Delmar south along New York, Philadelphia & Norfolk R. R. to Loretto.

| | |
|--|--------|
| Delmar, in northwest corner of Delmar National Bank; aluminum tablet stamped "Balto 56"----- | 57.249 |
|--|--------|

| | |
|---|--------|
| Salisbury, in southwest corner of front face of courthouse; aluminum tablet stamped "22 Balto"----- | 23.200 |
|---|--------|

| | |
|---|--------|
| Eden, in northwest corner of foundation of post office; aluminum tablet stamped "29 Balto"----- | 29.968 |
|---|--------|

From Eden east to Longridge.

| | |
|---|--------|
| Longridge, at southeast corner of former post office; iron post stamped "50 Balto"----- | 50.727 |
|---|--------|

From Quantico east to Salisbury.

| | |
|--|--------|
| Quantico, in corner of fence at Episcopal Church north of Quantico Street; iron post stamped "19 Balto"----- | 20.227 |
|--|--------|

PRINCESS ANNE QUADRANGLE.

[Latitude 38°–38° 15'; longitude 75° 30'–75° 45'.]

From Loretto south along New York, Philadelphia & Norfolk R. R. to Kingston.

| | |
|---|--------|
| Princess Anne, in front face of Somerset Savings Bank on Main street; bronze tablet stamped "17 Balto"----- | 18.130 |
|---|--------|

| | |
|--|--------|
| Westover, at intersection of New York, Philadelphia & Norfolk R. R. and road leading to Cottage Grove, opposite M. E. Miles's store; iron post stamped "15 Balto"----- | 14.156 |
|--|--------|

From Longridge south to Pocomoke City.

| | |
|--|--------|
| Whiteburg, at southeast corner of old store, inside of J. S. P. White's yard, in front of house; iron post stamped "30 Balto"----- | 29.674 |
|--|--------|

From Westover east via Pocomoke City to Goodwill.

| | |
|--|-------|
| Pocomoke City, in doorsill of Pocomoke City Hotel, corner Front and Market streets; aluminum tablet stamped "8 Balto"----- | 7.523 |
|--|-------|

REAL ISLAND QUADRANGLE.

[Latitude 36°-36° 15'; longitude 75° 45'-76°.]

From Kingston southwest to Hopewell.

Marker at southeast corner of A. Davis's drug store on Main street,
 60 feet east of railroad and 25 feet north of station; iron post
 stamped "7 Balto"-----

Feet.
 7.417

CRISFIELD QUADRANGLE.

[Latitude 37° 45'-38°; longitude 75° 45'-76°.]

At Crisfield.

Crisfield, J. W. Dishatoun's grocery store, face of door sill; aluminum
 tablet stamped "5 Balto 1900" (elevation determined from Coast
 and Geodetic Survey tide gage)-----

4.920

SNOW HILL QUADRANGLE.

[Latitude 38°-38° 15'; longitude 75° 15'-75° 30'.]

From Franklin City northwest to Goodwill, thence northeast to Snow Hill,
 thence northwest via Colbourne to Longridge.

Franklin City, 1 mile north of, on outskirts of Greenbackville, south-
 east corner of Virginia-Maryland boundary stone; marked "7"-----

6.72

Klej Grange, at intersection of roads from Mattaponi Landing and
 Snow Hill, on property of Drexel heirs, opposite former post office;
 iron post stamped "30 Balto"-----

29.283

Snow Hill, in sill of front entrance porch of courthouse, on northeast
 side of steps; tablet stamped "21 Balto"-----

20.552

Colbourne, opposite former post office, in northwest corner of J. E.
 Dickerson's front yard; iron post stamped "40 Balto"-----

40.046

PITTSVILLE QUADRANGLE.

[Latitude 38° 15'-38° 30'; longitude 75° 15'-75° 30'.]

From Snow Hill northeast to Berlin.

Newark, at southeast corner of Quenponco station of Philadelphia,
 Wilmington & Baltimore R. R.; iron post stamped "35 Balto"-----

35.151

From Wango north to Melson, thence west to Delmar.

Parsonsburg, at northeast corner of Riggin's grocery store, 100 feet
 north of road; iron post stamped "80"-----

79.651

From Melson east via Twilley to Campbell.

Twilley, in yard at northwest corner of C. W. Lynch's store; iron
 post stamped "40 Balto"-----

39.973

OCEAN CITY QUADRANGLE.

[Latitude 38° 15'-38° 30'; longitude 75°-75° 15'.]

From Campbell south to Berlin, thence west to Wango.

Campbell, inside of lot on the northwest intersection of roads, west
 of F. S. Campbell's store; iron post stamped "25 Balto"-----

24.775

Berlin, on southwest corner of front step of Exchange Savings Bank;
 bronze tablet stamped "45 Balto"-----

44.873

Belair, Elkton, Havre de Grace, and Parkton quadrangles.**BALTIMORE, CECIL, AND HARBOR COUNTIES.**

The leveling was done in Elkton quadrangle in 1896 by O. L. Pettibone; in Havre de Grace quadrangle in 1899 by C. M. Smith; in Belair quadrangle in 1899 by Smith and George Bailey; in 1900 by J. W. Hodges; and in 1910 by C. H. Semper; in Parkton quadrangle in 1899 by Smith and Bailey; and in 1900 by Hodges, J. S. B. Daingerfield, and Hargraves Wood.

ELKTON QUADRANGLE.

[Latitude $39^{\circ} 30' - 39^{\circ} 45'$; longitude $75^{\circ} 45' - 76^{\circ}$.]

From Bohemia Mills north to Elkton.

| | |
|--|------------------|
| Chesapeake, entrance to George R. Ross's store, in north end of door-sill of hall; bronze tablet stamped "17"----- | Feet. 17. 800 |
| Elkton, on top of step of south entrance to courthouse; copper bolt marked "U.S.G.S. b. m. 28 ft."----- | 28. 433 |
| Elkton, in doorsill of railroad station; copper bolt----- | 30. 00 |

From Elkton north to Appleton, thence west via Fair Hill¹ to Calvert, thence south via Zion and Bayview¹ to Northeast post office, thence southwest to Charlestown.

| | |
|---|----------|
| Strayhorn's mills, 2 miles northwest of Appleton, southeast corner of stone wall, foundation of wagon shed; bronze tablet stamped "173"----- | 173. 813 |
| Fairview, 3 miles east of, in front of Mahon's barn; top of land-boundary stone in center of road----- | 410. 40 |
| Calvert, in churchyard; top of land-boundary stone----- | 441. 77 |
| Calvert, in northwest corner of John E. Crother's store; bronze tablet stamped "441"----- | 441. 720 |
| Bayview, southwest corner of crossroads, foundation of W. L. Jones's boarding house; bronze tablet stamped "385"----- | 385. 300 |
| Bayview, 1.5 miles south of, on land-boundary stone west of road; highest point----- | 204. 45 |
| Leslie, in front of Baltimore & Ohio R. R. station; top of rail----- | 143. 4 |
| Charlestown station, 50 feet north of, in northwest corner of northwest cornerstone of cattle guards; copper bolt stamped "41"----- | 41. 540 |
| Charlestown, 390 feet south of railroad station, northeast corner of box culvert, on coping stone; copper bolt (Philadelphia, Baltimore & Washington R. R. b. m. 50)----- | 41. 20 |

HAVRE DE GRACE QUADRANGLE.

[Latitude $39^{\circ} 30' - 39^{\circ} 45'$; longitude $76^{\circ} - 76^{\circ} 15'$.]

From Aberdeen northwest to Carsons, thence north via Darlington to Conowingo.

| | |
|---|--------|
| Aberdeen, at east end of box culvert at milepost 65; copper bolt (Philadelphia, Baltimore & Washington R. R. b. m. 62)----- | 67. 60 |
|---|--------|

¹ Cross lines were run from Bayview via Pleasant Hill to Cowentown and from Pleasant Hill to Fair Hill, but on these no standard bench marks were set.

| | |
|---|-----------------|
| Aberdeen, in upper foundation stone of First National Bank of Aberdeen, southeast corner; aluminum tablet stamped "79 Balto"----- | Feet. 80.107 |
| Darlington, 3 miles south of, in east foundation stone of Prospect schoolhouse; bronze tablet stamped "345 Balto"----- | 346.113 |
| Conowingo, southwest bridge seat of county bridge; copper bolt (Philadelphia, Baltimore & Washington R. R. b. m. 11)----- | 69.11 |
| Conowingo, in northwest corner of post office, in foundation stone 2 feet from ground; aluminum tablet stamped "76 Balto"----- | 76.944 |

From Conowingo east to Rising Sun, thence south to Principio.

| | |
|--|---------|
| Porter Bridge, in foundation stone 3 feet above ground, in southwest corner of J. W. Richard's mill; aluminum tablet stamped "89 Balto"----- | 88.987 |
| Rising Sun, north side of Worthington's store, in foundation stone, 1 foot above ground; aluminum tablet stamped "387 Balto"----- | 387.265 |

From Port Deposit northeast via Principio to Zion.

| | |
|--|---------|
| Port Deposit, 0.9 mile south of, on northeast bridge seat of bridge 27; copper bolt (Pennsylvania R. R. b. m. 3)----- | 5.63 |
| Port Deposit, in northwest corner foundation stone of Port Deposit post office and town hall building; aluminum tablet stamped "16 Balto"----- | 16.431 |
| Principio, in southwest corner of foundation stone of H. R. Lynch's store, 2.5 feet from ground; aluminum tablet stamped "302 Balto"----- | 302.327 |

From Principio south to Principio Furnace, thence southwest to Havre de Grace.

| | |
|--|--------|
| Principio Furnace, 0.7 mile west of post office, stone monument east of road at southwest corner of property owned by W. H. Currier; marked on fence post "211"----- | 212.00 |
| Principio station, Philadelphia, Baltimore & Washington R. R., in doorsill; copper bolt (railroad b. m. 53)----- | 67.430 |
| Havre de Grace, in southwest back wall of Susquehanna River Bridge; copper bolt (Philadelphia, Baltimore & Washington R. R. b. m. 57)----- | 28.92 |
| Havre de Grace, in southwest corner of Philadelphia, Baltimore & Washington R. R. station, about 8 feet above tracks; aluminum tablet stamped "35 Balto"----- | 35.90 |

BELAIR QUADRANGLE.¹

[Latitude 39° 30'–39° 45'; longitude 76° 15'–76° 30'.]

From Pylesville north along Pennsylvania R. R. to Cardiff.

| | |
|---|---------|
| Pylesville, in northeast corner of Pyles Mill, 4 feet above ground, in foundation stone; aluminum tablet stamped "356"----- | 357.528 |
| Pylesville, in front of station, top of rail; b. m.----- | 368.7 |
| Whiteford, 150 feet south of station, 30 feet north of road crossing, in west guard rail over culvert; top of of north bolt marked "U. S. B. M. 504"----- | 503.76 |
| Whiteford, in front of station; top of rail----- | 500.4 |
| Cardiff, in front of station; top of rail----- | 418.4 |

¹ For elevations in Belair quadrangle in Pennsylvania see Bull. 515,

| | |
|--|-------------------|
| From Darlington west to Scarboro, thence south to Fountain Green. | |
| at (Sandy Hook), 0.5 mile north of, in southeast corner of Webster's spring house, 3 feet above ground; aluminum tabulated "209 Balto"----- | Feet. 210. 899 |
| in steps of courthouse; aluminum tablet stamped "394 Balto" (Elevation by a spur west from Fountain Green)----- | 395. 500 |
| Bradenbaugh along highway southeast to Federal Hill, thence northeast to point near Whitford, then southeast via Macton to Scarboro. | |
| at Hill, in southeast corner of foundation stone of J. F. Devoe's house, opposite former post office; aluminum tablet stamped "590 Balto"----- | 591. 227 |
| at Pyle, in foundation stone at northeast corner of Pyle's mill, 4 feet above ground; aluminum tablet stamped "356 Balto"----- | 357. 528 |
| at McNabb, 0.1 mile south of, in foundation stone at northwest corner of McNabb's house, 4 feet above ground; aluminum tablet stamped "249 Balto"----- | 250. 907 |
| From Taylor east along highway via High Point to Hickory. | |
| at High Point, in foundation stone on north side of High Point schoolhouse; aluminum tablet stamped "536 Balto"----- | 536. 714 |

PARKTON QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 76° 30'–76° 45'.]

From Bentley east along highway to Bradenbaugh.

| | |
|--|----------|
| at Bentley, 1,300 feet south of, in northwest wing wall of bridge 53; iron bolt (Pennsylvania R. R. b. m. 33)----- | 501. 820 |
| at Bentley, 0.5 mile north of, in northwest corner of Bentley Methodist church; bronze tablet stamped "607 Balto" (reported out of place number 11, 1907)----- | 607. 729 |
| in north foundation of M. S. Van Trump's store, at edge of lot; bronze tablet stamped "716 Balto"----- | 716. 043 |
| at northwest corner of schoolhouse lot; stone marked "709"----- | 709. 00 |
| at Bradenbaugh, in stone foundation of former post office, just to right of rear entrance; bronze tablet stamped "Balto 604"----- | 604. 879 |

From Sparks east along highway to Taylor.

| | |
|---|----------|
| at (Philopolis), 0.1 mile east of station, in southwest corner of Chapel, 1 foot above ground; bronze tablet stamped "Balto 583"----- | 268. 214 |
| in southwest corner of S. Phelps's blacksmith shop, about 2 feet above ground; bronze tablet stamped "583 Balto"----- | 583. 654 |

From Monkton west to Mount Carmel and return.

| | |
|---|----------|
| at Carmel, 0.5 mile north of, in center of east end of railroad box culvert, Pennsylvania R. R. b. m. 26----- | 317. 58 |
| at Carmel, in foundation stone of porch at northeast corner of Sparks's store and post office; bronze tablet stamped "674 Balto"----- | 673. 812 |

From Sparks north to Bentley.¹

| | |
|---|----------|
| at Bentley, in northwest corner of post office, 2 feet above ground; aluminum tablet stamped "348 Balto"----- | 347. 979 |
|---|----------|

¹ Based on Pennsylvania R. R. elevation plus 0.39 foot.

Annapolis. Baltimore. Ellicott. Laurel. Relay. and Westminster quadrangles.

ANNE ARUNDEL, BALTIMORE, CARROLL, AND PRINCE GEORGES COUNTIES.

The elevations in the following list are based on various bench marks of the Baltimore & Ohio and the Pennsylvania railroads in this vicinity.

The leveling was done in Annapolis, Baltimore, Ellicott, and Westminster quadrangles in 1902 by W. C. Palmer and W. G. Coates; in Laurel and Relay quadrangles in 1904 and 1905 by J. W. Hodges and Ralph Hutchins; and in Laurel quadrangle in 1906 by G. S. Buckley.

BALTIMORE QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 76° 30'–76° 45'.]

At Catonsville.

| | |
|---|------------------|
| Catonsville, State Insane Asylum, east face of southeast wing; bronze tablet stamped "325 Balto"----- | Feet. 395.800 |
|---|------------------|

At Pikesville.

| | |
|---|---------|
| Pikesville, main building of Soldiers' Home, just east of main entrance, in southeast corner of foundation wall; bronze tablet stamped "516 Balto"----- | 515.918 |
|---|---------|

From Sherwood east along highways via Towson to a point 4.6 miles east, thence via Lavender Hill (Parkville) to Lauraville.

| | |
|--|--------|
| Sherwood, 100 feet south of station, in west end of east center of arch culvert; copper bolt (Pennsylvania R. R. b. m.)----- | 284.15 |
|--|--------|

| | |
|--|---------|
| Towson, on southeast cornerstone of courthouse porch; bronze tablet stamped "465 Balto"----- | 465.221 |
|--|---------|

| | |
|---|---------|
| Parkville, Kelchensten's store and post office, northeast corner of foundation wall; bronze tablet stamped "343 Balto"----- | 343.278 |
|---|---------|

| | |
|---|--------|
| Lauraville, near northeast corner of city boundary, J. C. Mann's wagon shop, on south end of doorsill; chiseled square----- | 188.83 |
|---|--------|

From Timonium east along highways to Bosley, thence southwest to Towson.

| | |
|--|--------|
| Timonium, 0.5 mile south of, 800 feet north of milepost 11, in west end of culvert; copper bolt (Pennsylvania R. R. b. m. 14)----- | 357.09 |
|--|--------|

| | |
|--|---------|
| Bosley, on southeast corner of Valley Hotel; bronze tablet stamped "223 Balto."----- | 222.825 |
|--|---------|

At Mount Washington.

| | |
|--|---------|
| Mount Washington, bridge 5, over Western Run, at northeast side, on bridge seat; bronze tablet stamped "198 Baltimore 1900"----- | 198.744 |
|--|---------|

From point 0.4 mile north of Reistertown east along highways via Shawan to Cockeysville.

| | |
|---|---------|
| Shawan, F. G. Wheeler's store and residence, on southeast corner of foundation wall; bronze tablet stamped "439 Balto"----- | 438.948 |
|---|---------|

| | |
|--|--------|
| Cockeysville, 150 feet southeast of signal station, on northeast corner of culvert; copper bolt (Pennsylvania R. R. b. m. 17)----- | 278.68 |
|--|--------|

ELLICOTT QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 76° 45'–77°.]

From Ellicott City along Baltimore & Ohio R. R. and highways via Hollofield and Rockdale to Pikesville.

| | Feet. |
|--|----------|
| Ellicott City, southwest corner of courthouse (south face); aluminum tablet stamped "233 Balto"----- | 233. 242 |
| Oella, at W. J. Dickey & Son's woolen mills, west of tracks, south abutment of Baltimore & Ohio R. R. bridge over Patapsco River; chisel mark----- | 149. 88 |
| Oella, 1.6 miles northwest of, on southeast corner of west wing wall of Union Dam; copper bolt, stamped "187"----- | 187. 609 |
| Hollofield, 1.1 miles northwest of, on Quaker Hill, public school No. 2, on southwest corner of stone doorsill; chiseled shelf----- | 456. 30 |
| From Rockdale west along highways to Woodstock, thence north to Reisterstown. | |

| | |
|--|----------|
| Woodstock College, west of main entrance, over small window, on center stone; aluminum tablet stamped "415 Balto"----- | 414. 987 |
| Reisterstown, northwest corner stone of Russel's store; aluminum tablet stamped "735 Balto"----- | 735. 258 |

From Woodstock southwest along highways to West Friendship, thence north via Sykesville to Gamber, thence east to point 3.8 miles south of Reisterstown.

| | |
|--|----------|
| West Friendship, just west of post office, on milestone 19 north of Frederick pike; bronze tablet stamped "476 Balto"----- | 476. 023 |
| Sykesville, in second step of Sykesville Bank; bronze tablet stamped "383 Balto"----- | 382. 795 |
| Gamber, on southeast corner of Mount Pleasant M. E. Church; bronze tablet stamped "606 Balto"----- | 605. 568 |

WESTMINSTER QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 76° 45'–77°.]

From Reisterstown north along highways via Woodensburg and Fowlesburg to Hampstead, thence east to Mount Carmel.

| | |
|--|----------|
| Woodsburg, northeast corner of Methodist Church; top of corner stone, marked "A. D. 1888"----- | 703. 16 |
| Fowlesburg station, Argile's store and post office, in east foundation wall, opposite center of building; bronze tablet stamped "703 Balto"----- | 702. 771 |
| Hampstead, residence owned by C. W. Murray, in southwest corner of foundation wall; bronze tablet stamped "913 Balto"----- | 913. 271 |

From Hampstead along highways to Melrose, thence east to Rockdale, thence south to Mount Carmel.

| | |
|---|----------|
| Manchester, 0.5 mile northwest of, just over center of stone culvert at first stream to right; square cut on stone----- | 857. 37 |
| Rockdale, on northwest corner of paper mill; bronze tablet stamped "510 Balto"----- | 508. 504 |

From Woodsburg southwest along highways to Finksburg, thence northwest to Westminster.

| | |
|---|----------|
| Westminster, on fifth step of main entrance to courthouse; bronze tablet stamped "774 Balto"----- | 774. 337 |
|---|----------|

ANNAPOLIS QUADRANGLE.

[Latitude 38° 45'–39°; longitude 76° 15'–76° 30'.]

At Annapolis.¹

| | |
|---|-----------------|
| Annapolis, at Naval Academy, 8 feet southwest of observatory building; top of stone pier (C. & G. S. b. m. "Obs") | Feet. 23.012 |
| Annapolis, corner of State House; aluminum tablet stamped "58 Balto" | 57.546 |

RELAY QUADRANGLE.

[Latitude 39°–39° 15'; longitude 76° 30'–76° 45'.]

At Winans.

| | |
|--|---------|
| Winans, 780 feet south of Pennsylvania R. R. bench mark No. 101, east side of Baltimore & Ohio R. R. bridge | 36.766 |
| From Relay east along highway to Pumphrey, thence along Maryland Electric Ry. to Elvaton, thence southwest along highway to Bowie. | |
| Pumphrey, in center of north foundation wall of station and store building; aluminum tablet stamped "51 Adj. 1903" | 51.153 |
| Glenburnie, 1.5 miles northeast of highway bridge over Furnace Branch, on top of northwest retaining wall; aluminum tablet stamped "8 Adj. 1903" | 7.617 |
| Glenburnie, on northwest abutment of Furnace Branch bridge; cut (Md. Geol. Survey b. m. 9) | 7.511 |
| Elvaton, in corner of dwelling 50 feet west of store; copper nail (Md. Geol. Survey b. m. 12 B) | 75.979 |
| Elvaton post office, 100 feet south of station, in north foundation of water tank; aluminum tablet stamped "69 Adj. 1903" | 69.163 |
| Benfield, in southeast foundation wall of D. L. Stone's house; aluminum tablet stamped "110 Adj. 1903" | 109.197 |
| Waterbury, 0.5 mile north of, in east wall of railway bridge over highway; aluminum tablet stamped "92 Adj. 1903" | 91.504 |
| Conaways, 0.3 mile northwest of highway bridge over Little Patuxent River, in southeast abutment wing wall; aluminum tablet stamped "53 Adj. 1903" | 52.431 |
| Conaways, 4 miles northwest of Philadelphia, Baltimore & Washington R. R. bridge over Little Patuxent River, in south abutment; copper bolt | 74.945 |

At Jones Station on Maryland Electric Ry.²

| | |
|--|---------|
| Jones, in southeast corner of foundation of Mr. Jones's warehouse; aluminum tablet stamped "69 Adj. 1903" | 68.100 |
| At Odenton and Severn stations on Philadelphia, Baltimore & Washington R. R. | |
| Odenton, inside yard at station, northwest corner; iron post stamped "160 Adj. 1903" | 160.089 |
| Severn, 20 yards east of station, 410 feet south of milepost 110, east of track; iron post stamped "167 Adj. 1903" | 166.820 |

¹ Coast and Geodetic Survey bench mark "Woods" was checked by two independent lines from bench mark "Obs" and appears to have settled 0.34 foot; the doorstep was badly out of plumb.

² Set from adjusted Maryland State Geological Survey levels.

At Dorsey.

| | |
|---|------------------|
| Dorsey, east of railroad, south of highway, in west foundation wall, at northwest corner of store; aluminum tablet stamped "121 Adj. 1903"----- | Feet. 120.500 |
|---|------------------|

LAUREL QUADANGLE.

[Latitude 39°-30' 15"; longitude 76° 45'-77°.]

At Bowie.

| | |
|--|---------|
| Bowie, in south foundation wall of Imperial Hotel; aluminum tablet stamped "154 Adj. 1903"----- | 153.820 |
| Bowie, on stone east of tower east of Philadelphia, Washington & Baltimore R. R. track; copper bolt----- | 148.600 |

Along Baltimore & Ohio R. R.¹

| | |
|--|---------|
| Laurel, on southwest corner of Main Street and Washington Avenue, in east face at northeast corner of large brick store building, 3 feet above ground; aluminum tablet stamped "156 Adj. 1913."----- | 155.484 |
| Waterloo, at northeast corner of crossroads, in southeast corner of south foundation wall of house; aluminum tablet stamped "232 Adj. 1903"----- | 281.551 |
| Annapolis Junction, overhead bridge, in east foundation wall of north abutment; copper bolt----- | 174.540 |
| Annapolis Junction, warehouse of Alphonso Latchford, in southeast face of central brick foundation pier; aluminum tablet stamped "171 Adj."----- | 170.749 |

From Ellicott City southwest along highway to Clarksville.

| | |
|---|---------|
| Columbia, in south foundation wall of post-office building; aluminum tablet stamped "402 Adj. 1904"----- | 402.378 |
| Elloak, in southeast corner of foundation wall of store and post office; aluminum tablet stamped "433 Adj. 1904"----- | 432.697 |
| Clarksville, in southeast corner of stone building, store and post office, 2 feet above ground; aluminum tablet stamped "487 Adj 1904"----- | 486.700 |

From Ammendale west along highway to Fairland, thence north to Burtonsville, thence northwest to Ashton, thence northeast to Clarksville.

| | |
|--|---------|
| Ammendale, between Baltimore & Ohio R. R. tracks, opposite mile-post marked "Baltimore 26 miles;" vertical rail section----- | 137.839 |
| Ammendale, in southeast corner of Lasalle Academy building; aluminum tablet stamped "182"----- | 181.970 |
| Ammendale, 3.2 miles northwest of, at main crossroads in woods, 15 feet east of roads; iron post stamped "279"----- | 278.918 |
| Fairland, 50 feet east of road, southwest corner of frame house, in foundation; aluminum tablet stamped "414"----- | 413.896 |
| Burtonsville, 0.3 mile northwest of, northwest corner of Liberty Grove Church; aluminum tablet stamped "482"----- | 481.889 |
| Spencerville, 0.1 mile west of, 60 feet south of road, 2 feet from northwest corner of house, in stone; aluminum tablet stamped "516 B"----- | 516.364 |

¹ Bench marks set in 1905 and rechecked in 1906.

| | |
|---|------------------|
| Ashton, 2.4 miles northeast of, Snell Bridge over Patuxent River, at south end of west abutment, in bridge seat; aluminum tablet stamped "294"----- | Feet. 293.476 |
|---|------------------|

Washington quadrangle.

MONTGOMERY COUNTY.

The elevations in the following list were determined by spirit leveling extended from the precise-level line run from Great Falls, Md., to Lock 8 along the Chesapeake & Ohio Canal. They are based upon Coast and Geodetic Survey bench mark F at Great Falls, the bottom of a square cut on the west wall of Lock 20, 0.2 meter west of edge and 1.65 meters south of north gate. The accepted elevation of this mark is 166.592 feet above mean sea level. The main line along the Chesapeake & Ohio Canal below Lock 8 was leveled twice with a Y level in one direction and once in the opposite direction with an alidade used as a level. Spur lines were run with a telescopic alidade; single to determine water-surface elevations, and double where gages were established.

The leveling was done in December, 1910, by C. E. Cooke.

WASHINGTON QUADRANGLE.¹

[Latitude 38° 45'–39°; longitude 76° 45'–77° 15'.]

From Lock 8 southeast along Chesapeake & Ohio Canal to Chain Bridge (double run level line).

| | |
|--|-----------------|
| Lock 8, on north wall, on north capstone of east end; bronze tablet stamped "60 Prim. Trav. Sta. No. 3"----- | Feet. 69.034 |
| Lock 7, 0.4 mile southeast of, 150 feet southeast of little cottage with green blinds, 20 feet south of towpath, 3 feet above ground, in arched root of tree; copper nail----- | 53.56 |
| Lock 7, 0.9 mile southeast of, 10 feet west of towpath, in stump; copper nail----- | 53.10 |
| Lock 7, 1.1 miles southeast of, in stump; copper nail----- | 54.16 |
| Lock 5, 1,000 feet south of, 20 feet west of towpath, in small stump; copper nail----- | 41.55 |

Elevations along Potomac River determined by spur lines (double run where gages are connected with).

| | |
|--|-------|
| Lock 14, 31 feet upstream from gage, on east bank of river, on rock; chiseled square----- | 49.79 |
| Lock 9, 0.2 mile southeast of, on west side of towpath, in stub of small tree; copper nail----- | 60.49 |
| Lock 8, 6.2 feet upstream from gage on east bank of river, in limb of tree; copper nail----- | 50.61 |
| Lock 7, opposite, on east bank of Potomac River, 6.5 feet downstream from gage, on rock; chiseled mark and painted circle----- | 41.42 |
| Lock 6, 0.4 mile northwest of, on east bank of river, 8 feet upstream from gage No. 3, in root of tree; copper nail----- | 41.57 |

¹ For elevations in Washington quadrangle in Virginia see Bull. 562.

Washington quadrangle.

PRINCE GEORGES COUNTY.

The elevations in the following list are based upon bench marks of the Pennsylvania R. R. at Bennings, D. C., and bench mark G of the Coast and Geodetic Survey at Alexandria, Va.

The leveling was done in 1912 by R. C. Seitz.

WASHINGTON QUADRANGLE.

From Bennings, D. C., north to Chesapeake Beach R. R., thence east along said railroad 5.5 miles to Ritchie, thence south along highways through Forestville and Camp Springs to Clinton, thence west through Friendly to Broad Creek, thence north and west to Alexandria, Va.

NOTE.—An error of 0.44 foot was distributed in this line.

| | |
|---|-----------------|
| Milepost marked "C. J. 3 M," about 700 feet east of, in support of overhead bridge; copper nail painted "150.2"----- | Feet. 150.15 |
| Milepost marked "C. J. 4 M," in south side at base; spike painted "158.2"----- | 158.08 |
| Milepost marked "C. J. N. 5 M"; spike in base painted "190.8"----- | 190.73 |
| Chesapeake Junction, 2.8 miles east of, railroad bridge over private road, in east end of south guard rail; copper nail painted "163.7"----- | 163.62 |
| Ritchie, in front entrance to general store; aluminum tablet stamped "Prim. Trav. Sta. No. 2, 185, 1912, SZ"----- | 165.08 |
| Ritchie, 0.7 mile south of, west of road and about 50 feet north of gate, in stump of fallen tree; copper nail painted "261.9"----- | 261.78 |
| Forestville, in southwest angle of crossroads, in root of maple tree; spike painted "280.1"----- | 279.90 |
| Forestville, 1.75 miles south of, in west coping of small concrete culvert; aluminum tablet stamped "252, 1912, SZ"----- | 251.891 |
| Forestville, 2 miles south of, in southwest angle of crossroads, in root of oak tree; copper nail painted "268.1"----- | 267.88 |
| Camp Springs, 0.75 mile northeast of, at T road west, 25 feet west of house, in top of stump; copper nail painted "276.8"----- | 276.58 |
| Camp Springs, southwest corner of crossroads, in coping of culvert; aluminum tablet stamped "Prim. Trav. Sta. No. 3, 266, 1912, SZ"----- | 265.56 |
| Camp Springs, 1.5 miles south of, 200 feet north of T road east, in west coping of concrete culvert; chiseled square painted "248.9"----- | 248.64 |
| Clinton, 300 feet north of crossroads, in coping at north end of concrete culvert; aluminum tablet stamped "245, 1912, SZ"----- | 244.46 |
| Clinton, 0.8 mile west of, in west end of box culvert; spike painted "238.9"----- | 238.08 |
| Clinton, 2 miles southwest of, in north angle of T road northwest, in root of small cedar tree; copper nail painted "246.1"----- | 245.83 |
| Clinton, 2.8 miles west of, just east of Tinkers Creek, on south side of road, in top of fence post; copper nail painted "136.8"----- | 136.28 |
| Friendly, 1.5 miles northeast of, on north side of road at T road north, about 35 feet northeast of mail box, in small cedar near fence; copper nail painted "239.8"----- | 239.26 |
| Friendly, 1.5 miles northeast of, in triangular plot between roads, at T road north; iron post stamped "242, 1912"----- | 241.389 |
| Friendly, at T road south, in center of road, in red sandstone; chiseled square painted "231.0"----- | 230.37 |

| | |
|---|---------------|
| New Glatz, 1.25 miles south of, at T road east, in west end of small bridge; nail painted "10.4"----- | Feet. 9.54 |
| New Glatz, 1.25 miles south of, bridge over Broad Creek, in south end of west abutment; aluminum tablet stamped "17, 1912, 8Z"--- | 16.183 |
| Alexandria, Va., opposite, on east side of Potomac River, at water's edge, in top of D. C. line post; cross cut----- | 2.94 |

Indian Head, Nanjemoy, and Stafford quadrangles.

CHARLES AND PRINCE GEORGES COUNTIES.

The elevations in the following list were determined by primary levels connecting Coast and Geodetic Survey gage bench marks at Clifton, Marshall Hall, and Posey's wharf, Md., and accord approximately with mean sea level.

The leveling was done by A. F. McNair in 1911.

INDIAN HEAD QUADRANGLE.¹

[Latitude 38° 30'–38° 45'; longitude 77°–77° 15'.]

From Marshall Hall south along highway to point near Fort Tobacco, thence west to Posey's wharf.

| | |
|--|---------------|
| Marshall Hall, near east side of wharf, in top of stone abutment, about 3 inches from northeast corner; cross cut (C. & G. S. b. m.)-- | Feet. 2.73 |
| Marshall Hall, 0.9 mile south of, on west side of road at three corners, in root of oak tree; copper nail stamped "45.5"----- | 45.49 |
| Marshall Hall, 1.9 miles south of, on east side of road at three corners, in root of oak tree; copper nail stamped "39.1"----- | 39.06 |
| Marshall Hall, 2.7 miles south of, at east end of Oswald Thee's house, in north side of brick chimney, 3 feet above ground; aluminum tablet stamped "25 Md"----- | 25.317 |
| Marshall Hall, 3.1 miles south of, on east side of road, middle of hill, in root of oak tree; copper nail stamped "120"----- | 120.33 |
| Pomonkey, 2.3 miles north of, on east side of road at three corners, in root of pine tree; copper nail stamped "185"----- | 185.04 |
| Pomonkey, 1.4 miles north of, on east side of road at three corners, in root of stump used as corner fence post; copper nail stamped "180.3"----- | 180.28 |
| Pomonkey, 1.1 miles north of, on east side of road, 150 feet north of intersection at four corners, in root of oak tree; copper nail stamped "179.3"----- | 179.28 |
| Pomonkey, 0.5 mile north of, on east side of road at three corners, in root of pine tree; copper nail stamped "174.0"----- | 173.97 |
| Pomonkey, southwest corner foundation pier to schoolhouse, in west side of; aluminum tablet stamped "168 Md"----- | 168.453 |
| Pomonkey, near post office, on east side of road at three corners, in root of tree; copper nail stamped "161.6"----- | 161.62 |
| Pomonkey, forks in road south of, west side of road between store and blacksmith shop; chiseled cross on boulder, marked "175.3"----- | 175.29 |
| Pomonkey, 1.8 miles south of, at top of hill, on east side of road, in root of oak tree; copper nail stamped "172.3"----- | 172.32 |

¹ For elevations in Indian Head quadrangle in Virginia see Bull. 562.

| | |
|---|-----------------|
| Pomonkey, 3 miles south of, on east side of road at three corners, in root of oak tree; copper nail stamped "150.2"----- | Feet. 150.16 |
| Pomonkey, 3.9 miles south of, in east side of brick stable belonging to Christian Jensen, at southeast corner, 4 feet above ground; aluminum tablet stamped "152 Md"----- | 151.610 |
| Pomonkey, 5.3 miles south of, west side of road, in root of oak tree, 5 feet from trunk; copper nail stamped "182.7"----- | 182.70 |
| Pomonkey, 6.4 miles south of, roads east-west-north, in root of oak tree on south side of road; copper nail stamped "170"----- | 170.02 |
| Pomonkey, 7.5 miles south of, roads north-south-west, on east side of road at edge of woods, in root of oak tree; copper nail stamped "162.1"----- | 162.12 |
| Port Tobacco, 1.6 miles west of, 1.1 miles north of four corners on Port Tobacco-Pisgah road, on west side of road, in woods; chiseled cross on top of bowlder, marked "151.4"----- | 151.84 |
| Port Tobacco, 2.4 miles west of, in southwest corner of burned brick building formerly used as county house, 5 feet above ground; aluminum tablet stamped "181 Md"----- | 180.590 |
| Port Tobacco, 2.5 miles west of, on north side of road at four corners, in root of gum tree; copper nail stamped "171.1"----- | 177.06 |
| Port Tobacco, 3.6 miles west of, on south side of road, in root of large water-oak tree; copper nail stamped "166.5"----- | 166.48 |
| Pisgah, 2.5 miles east of, on south side of road at three corners, in root of oak tree; copper nail stamped "163.7"----- | 163.72 |
| Pisgah, 2 miles east of, on east side of road at three corners, in root of small oak tree; copper nail stamped "150"----- | 149.82 |
| Pisgah, 1.4 miles east of, in south side of southeast corner foundation pier to Smith's Chapel; aluminum tablet stamped "159 Md"----- | 158.961 |
| Pisgah, 0.4 mile east of, on north side of road at three corners, in root of water-oak tree; copper nail stamped "121.8"----- | 121.78 |
| Pisgah, in front of Hotel Braganier, in root of oak tree; copper nail stamped "123.6"----- | 123.55 |
| Pisgah, 0.8 mile west of, on south side of road at three corners, in root of red-oak tree; copper nail stamped "121.9"----- | 121.80 |
| Pisgah, 2.6 miles west of, at intersection of roads, in root of oak tree; copper nail stamped "86"----- | 86.81 |
| Pisgah, 2.9 miles west of, 15 feet south of center of road, in bowlder; aluminum tablet stamped "34 Md"----- | 34.398 |
| Posey's wharf, 3.4 miles northeast of, on north side of road at three corners, in stump; copper nail stamped "105.9"----- | 105.85 |
| Posey's wharf, 2.2 miles northeast of, on west side of road at three corners, in root of oak tree; copper nail stamped "65.1"----- | 65.01 |
| Posey's wharf, 1.5 miles northeast of, at church at three corners, in root of pine tree; copper nail stamped "59.8"----- | 59.75 |
| Posey's wharf, 1.1 miles northeast of, on west side of road at three corners, in stump; copper nail stamped "12"----- | 12.74 |
| Posey's wharf, 35 paces east of shore end of wharf, in horizontal cut in root of maple tree, with three nails driven in flush (C. & G. S. No. 2.)----- | 2.26 |
| Posey's wharf, 16 paces southwest of shore end of wharf; horizontal cut in root of cherry tree, with three nails driven in flush (C. & G. S. No. 1.)----- | 7.590 |

From point 2 miles east of Pignah south 1.75 miles along highway (part of line to Clifton Beach).

| | |
|---|-----------------|
| Hilltop, 1.9 miles north of, on west side of road at three corners, in top of old stump; copper nail stamped "140.4"----- | Feet. 140.41 |
|---|-----------------|

From point 2.5 miles west of Port Tobacco south along highway 0.8 mile (part of double-run spur line to McConchie).

| | |
|--|--------|
| McConchie, 0.2 mile north of, at intersection of roads; painted square on large bowlder, marked "162.5"----- | 162.52 |
|--|--------|

NANJEMOY QUADRANGLE.

[Latitude 38° 15'–38° 30'; longitude 77°–77° 15'.]

From point near Hilltop west along highway to Ironsides, thence south to Grayton, thence to Clifton Beach.

| | |
|---|---------|
| Hilltop, 1.4 miles north of, in front of store at three corners, in root of water-oak tree; copper nail stamped "147.3"----- | 147.24 |
| Hilltop, in house owned by Fred Davis, in south side of brick chimney, about 4 feet above ground; aluminum tablet stamped "133 Md"----- | 132.904 |
| Hilltop, 0.7 mile southwest of, south side of road, at three corners, in top of post used in retaining wall; copper nail stamped "35.2"--- | 35.21 |
| Hilltop, 1.7 miles west of, on north side of road at three corners, in root of stump; copper nail stamped "138.9"----- | 138.91 |
| Hilltop, 2 miles west of, on southwest corner of intersection of roads, in root of small pine stump; copper nail stamped "142.6"----- | 142.53 |
| Ironsides, in front of store, in root of small tree; copper nail stamped "126.0"----- | 125.97 |
| Ironsides, 0.8 mile west of, on south side of road at three corners, in root of small tree; copper nail stamped "135.4"----- | 135.37 |
| Ironsides, 1.1 miles southwest of, in woods, on east side of road at three corners, in root of stump; copper nail stamped "139.0"----- | 138.94 |
| Mount Hope, 0.5 mile north of, on west side of road at angle, in root of double red-oak tree; copper nail stamped "119.1"----- | 119.09 |
| Bethel, near Mount Hope Church, in south side of southeast corner of schoolhouse; aluminum tablet stamped "118 Md"----- | 113.094 |
| Mount Hope, 1.6 miles south of, on south side of road, in root of red-oak tree; copper nail stamped "84.5"----- | 84.51 |
| Mount Hope, 1.8 miles south of, on north side of road at three corners, in root of cedar tree; copper nail stamped "74.8"----- | 74.76 |
| Cross Roads, at four corners, in northeast corner of roads, in root of water-oak tree; copper nail stamped "81.3"----- | 81.32 |
| Grayton, in front of house owned by Price Gray, east side of top of highest concrete step; aluminum tablet stamped "70 Md 1911"----- | 70.133 |
| Grayton, 1 mile south of, in forks of road, in root of oak tree; copper nail stamped "94.4"----- | 94.88 |
| Clifton Beach, 3.2 miles east of, 150 feet west of run, on north side of road, in root of oak tree; copper nail stamped "20.7"----- | 20.63 |
| Clifton Beach, 2.7 miles east of, 300 feet east of three corners, on south side of road, in root of large oak tree; copper nail stamped "77.5"----- | 77.60 |
| Clifton Beach, 2 miles east of, on south side of road at intersection; painted square on bowlder, marked "74.7"----- | 74.65 |

From point southwest of Fort Tobacco along highway to point 1.8 miles south of McConchie (part of double-run spur line).

| | |
|---|-----------------|
| McConchie, 0.1 mile south of, on west side of road at three corners, in root of gum tree; four nails marked "144.4"----- | Feet. 144.20 |
| McConchie, 1.8 miles south of, in middle of south side of house owned by W. J. Smythe, 4 feet above ground; aluminum tablet stamped "151 Md. 1911"----- | 150.800 |

STAFFORD QUADRANGLE.

[Latitude 38° 15'–38° 30'; longitude 77° 15'–77° 30'.]

At Clifton Beach.

| | |
|--|-------|
| Clifton Beach, 208 feet northeast of shore end of old wharf, in root of small cedar tree; horizontal cut (C. & G. S. b. m. No. 2)----- | 5.860 |
|--|-------|

Ijamsville, Mount Airy, Rockville, and Seneca quadrangles.

FREDERICK, HOWARD, AND MONTGOMERY COUNTIES.

The elevations in the following list are based on Baltimore & Ohio R. R. precise-level bench marks.

The leveling in Ijamsville, Mount Airy, and Seneca quadrangles was done in 1906 by R. A. Farmer; in Rockville quadrangle partly in 1904 by Ralph Hutchins and partly in 1906 by T. A. Green and W. O. Tufts.

MOUNT AIRY QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 77°–77° 15'.]

From Cedar Grove northeast along highway to Mount Airy.

| | |
|---|------------------|
| Damascus, Dr. B. F. Lansdale's house, southeast corner of foundation; tablet stamped "845"----- | Feet. 845.632 |
| Ridgeville, Nelson's Hotel, southeast corner of coping of yard; tablet stamped "817"----- | 817.094 |

From Mount Airy northwest along highway to crossroads 1 mile north of New London, thence north to Libertytown, thence east to Winfield, thence south to Woodbine.

| | |
|---|---------|
| Libertytown, Mrs. Carter's house, northeast corner of foundation; tablet stamped "523"----- | 523.854 |
| Unionville schoolhouse, 8 feet east of main entrance, in stone foundation; tablet stamped "450 Maryland"----- | 450.030 |
| Taylorville, 1.5 miles west of, in south wall of Franklin schoolhouse; primary-traverse station 46A, stamped "882"----- | 882.782 |
| Taylorville schoolhouse, at northeast corner. In foundation; aluminum tablet stamped "819"----- | 819.523 |
| Day, in east foundation of church, at southeast corner, tablet stamped "768"----- | 769.045 |

From Woodbine south along highway to Unity.

| | |
|---|---------|
| Lisbon, on east side of wagon road, at southwest corner of Mr. Lascey's house, in foundation; tablet stamped "591"----- | 591.972 |
| Florence, northeast corner of store, in foundation; tablet stamped "627"----- | 627.846 |

UJAMSVILLE QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 77° 15'–77° 30'.]

From Clarksburg northwest to Frederick Junction.

| | |
|--|-------------------------|
| Hyattstown, south abutment of bridge over Little Bennetts Creek, southeast corner of bridge seat; tablet stamped "362"----- | Feet. 361.780 |
| Urbana, near northwest corner of former post office, in west wall; tablet stamped "468"----- | 467.661 |
| Frederick Junction, highway bridge over Monocacy River, southwest corner of south abutment, in coping stone; tablet stamped "253"--- | 253.067 |
| Frederick Junction, Baltimore & Ohio R. R. bridge over Monocacy River, east abutment, northeast mud wall; copper bolt----- | 266.147 |

From Frederick Junction north to Charlesville, thence east through Walkersville and Mount Pleasant to Libertytown.

| | |
|---|---------|
| Frederick, 300 feet east of station, about 15 feet south of track, in natural rock; copper nail (Baltimore & Ohio R. R. precise-level mark)----- | 289.294 |
| Frederick, south side of Church Street, between North Market and Court streets, Jacob Rohrbach's residence and office, stoop to office, top step, southwest corner; tablet stamped "296"----- | 295.665 |
| Charlesville, bridge over Tuscarora Creek, southwest coping stone of south abutment; tablet stamped "367"----- | 366.705 |
| Walkersville, 2 miles west of, bridge over Monocacy River, north end of center pier, primary-traverse station 547; tablet stamped "283"--- | 282.931 |
| Walkersville, Walkersville Savings Bank, in front wall, 2 feet below window sill; tablet stamped "320"----- | 319.664 |
| Mount Pleasant, Clayton Zimmerman's brick store, 2 feet below window sill; tablet stamped "475"----- | 475.191 |
| Libertytown, 2.5 miles southwest of, crossroads at Chestnut Grove School No. 5, south foundation wall near west corner of school-house, 0.5 foot above ground; tablet stamped "619"----- | 618.847 |

At crossroads 1.2 miles north of New London.

| | |
|--|---------|
| New London, 1.2 miles north of, at northwest corner of road crossing on Libertytown pike, in flint rock 1 by 2 by 3 feet; aluminum tablet stamped "519"----- | 518.970 |
|--|---------|

ROCKVILLE QUADRANGLE.

[Latitude 39°–39° 15'; longitude 77°–77° 15'.]

From Ashton west to Sandy Spring and return.

| | |
|--|---------|
| Sandy Spring, 30 feet south of road, granite slab at entrance to the office of the Mutual Fire Insurance Co.; aluminum tablet stamped "484"----- | 483.735 |
|--|---------|

From Clarksville west along highway to Germantown.

| | |
|---|---------|
| Clarksville, 3.9 miles southwest of, north of highway, at Patuxent River, 50 feet west of center of bridge, 2.5 feet from east end of large flat rock; aluminum tablet stamped "316 Adj. 1904"----- | 315.800 |
| Unity, 35 feet west of former post office, south of highway, in northeast foundation wall of Ernest Gregg's tenant house; aluminum tablet stamped "520 Adj. 1904"----- | 520.000 |

| | |
|---|------------------|
| Unity, 2.1 miles southwest of, at Hawlings River, in west end of northeast abutment, on bridge seat, 1.7 feet below floor surface; aluminum tablet stamped "457 Adj. 1904"----- | Feet. 456.962 |
| Laytonsville, in south foundation wall of store and post office, at northwest corner of crossroads; aluminum tablet stamped "615 Adj. 1904"----- | 615.100 |
| Goshen, in southwest corner of foundation wall of store; aluminum tablet stamped "425 Adj. 1904"----- | 425.069 |
| Brink, in east foundation wall of W. T. Dowden's residence; aluminum tablet stamped "627 Adj 1904" (primary-traverse station)----- | 627.129 |

From Brink north to Cedar Grove.

| | |
|---|---------|
| Cedar Grove, in foundation at northwest corner of Upper Seneca Baptist Church, 1 foot above ground; tablet stamped "637"----- | 637.199 |
|---|---------|

From Kensington north along highway by an indirect route to Olney, thence northwest to Laytonsville.

| | |
|---|---------|
| Garrett Park, 60 feet south of road crossing; top of west rail----- | 300.0 |
| Wheaton, on south side of store kept by J. C. Cissel; aluminum tablet stamped "459"----- | 459.090 |
| Layhill, in south face at southeast corner of foundation of store kept by W. P. Beal; aluminum tablet stamped "438"----- | 437.640 |
| Norbeck, south of road, west of forks, in north foundation wall of Arthur Stonestreet's store; aluminum tablet stamped "499"----- | 498.958 |
| Olney, near southwest corner of town hall, in west face; aluminum tablet stamped "544"----- | 543.473 |
| Olney, 2.6 miles northwest of, at road forks, in east face at northeast corner of house owned and occupied by Thomas Griffith; aluminum tablet stamped "523"----- | 522.675 |

From Rockville southwest along highway to Great Falls.

| | |
|--|---------|
| Rockville, top of corner stone in north side of courthouse, 12 feet east of entrance, in granite foundation, 1 foot below water table; aluminum tablet stamped "451"----- | 450.986 |
| Rockville, 3.9 miles southwest of, at road forks east, in chimney on north side of schoolhouse; aluminum tablet stamped "420"----- | 420.060 |
| Great Falls, on the capstone near west end of south wall of Lock 20, Chesapeake & Ohio Canal, 0.2 meter from extreme north and 0.45 meter from extreme east edge of lock, 1.65 meters from west gate; bottom of square (C. & G. S. b. m. F)----- | 166.592 |

At Washington Grove and Gaithersburg.

| | |
|---|---------|
| Washington Grove, between tracks, opposite milepost 21; rail (Baltimore & Ohio R. R. b. m.)----- | 518.824 |
| Gaithersburg, R. A. Young's store, northwest corner Fredericksburg avenue and Chestnut street; primary-traverse tablet stamped "508"----- | 507.811 |

SENECA QUADRANGLE.¹

[Latitude 39°-39° 15'; longitude 77° 15'-77° 30'.]

At Germantown.

| | |
|---|------------------|
| Germantown, 50 feet south of bridge over railroad, west of road, in east face at northeast corner of house occupied by C. E. Keeper and owned by H. D. Waters; aluminum tablet stamped "449"----- | Feet. 449.287 |
| Germantown, in front of station; top of rail----- | 429.50 |

From Gaithersburg southwest to Darnestown, thence west to Poolesville, thence north to Barnesville.

| | |
|--|---------|
| Darnestown, Windsor store, in brick foundation to cellar door; tablet stamped "436"----- | 435.800 |
| Dawsonville, in north wall of Allnut ice house; tablet stamped "305"----- | 305.200 |
| Poolesville, in south wall of T. R. Hall's brick house; tablet stamped "415"----- | 414.590 |

From Poolesville southwest to Edwards Ferry.

| | |
|---|---------|
| Edwards Ferry, Chesapeake & Ohio Canal, southwest corner, Lock 25; primary-traverse station 88, tablet stamped "207"----- | 206.365 |
|---|---------|

From Brink northwest to Clarksburg.

| | |
|--|---------|
| Clarksburg, near southwest corner of M. E. Church South, in west foundation wall; aluminum tablet stamped "658"----- | 658.452 |
|--|---------|

From Washington, D. C., to Washington Junction.

| | |
|--|---------|
| Milepost "W. 37," 225 feet west of, at southeast corner of culvert; copper bolt (b. m. 38)----- | 284.448 |
| Tuscarora, 150 feet west of milepost 39, south end of east wall of box culvert; copper bolt (b. m. 40A)----- | 226.092 |

Antietam and Martinsburg quadrangles.**FREDERICK AND WASHINGTON COUNTIES.**

The following elevations are based on precise-level lines of the Coast and Geodetic Survey and the Baltimore & Ohio R. R.

The leveling was done mostly in 1907 by W. R. Winstead; but some work was done in each quadrangle in 1908 by J. M. Harris.

ANTIETAM QUADRANGLE.

[Latitude 39° 15'-39° 30'; longitude 77° 30'-77° 45'.]

From Harpers Ferry east along Baltimore & Ohio R. R. to Brunswick, thence north along highway to Petersville, thence east to Jefferson, thence south to Point of Rocks.

| | |
|--|------------------|
| Harpers Ferry, 0.6 mile east of, about 2.5 miles west of Weverton, about 400 feet east of Harpers Ferry tunnel, 300 feet west of milepost B. 81, in box culvert on south side of railroad, in southeast abutment; iron plug (Baltimore & Ohio R. R. b. m. 56)----- | Feet. 280.268 |
| Sandy Hook, south track, in front of station; top of south rail marked "270 U.S."----- | 270.0 |

¹ For elevations in Seneca quadrangle in Virginia see Bull. 562.

| | |
|---|------------------|
| Sandy Hook, 0.5 mile east of, 170 feet west of milepost B. 80, in center of double track: iron rod with "X" on top driven in ground, marked "264 U.S.B.M."----- | Feet. 264. 14 |
| Weverton, 125 feet west of station, 50 feet west of road crossing, 15 feet north of track, in southwest pillar of Baltimore & Ohio R. R. water tower; aluminum tablet stamped "Maryland 260 Adj"----- | 259. 596 |
| Weverton, 2.8 miles east of, 1,000 feet west of Brunswick station, on northeast corner of north abutment of culvert; point marked "250 U.S.B.M."----- | 249. 60 |
| Brunswick, north track at street crossing; top of north rail marked "249.5 U.S."----- | 249. 2 |
| Brunswick, opposite post office, in southeast corner of Savings Bank; aluminum tablet stamped "Maryland 266 Adj"----- | 266. 236 |
| Petersville, 0.2 mile east of, at public road fork, in front face (east side) of Lutheran Church; aluminum tablet stamped "Md. 524 Adj"----- | 523. 325 |
| Petersville, 2.4 miles east of, at foot of hill, south side of east end of covered bridge over Catoctin Creek, on top of large iron bolt; point marked "291 U.S.B.M."----- | 290. 54 |
| Jefferson, 300 feet west of electric car station, at Frederick-Picke-Catoctin road fork, northwest corner of schoolhouse; aluminum tablet stamped "Maryland 583 Adj"----- | 582. 787 |
| Jefferson, 1.6 miles south of, at foot of hill at road fork to Catoctin station, in southwest abutment of iron bridge over stream; large iron bolt marked "417"----- | 416. 58 |
| Jefferson, 2.5 miles south of, at foot of hill, 600 feet west of brick house, on top of northeast abutment of bridge over creek; point marked "454"----- | 453. 85 |
| Jefferson, 3.9 miles south of, at foot of hill, about 1,000 feet north of W. C. Adams's residence, in west abutment of culvert over small stream; aluminum tablet stamped "Maryland 389 Adj"----- | 388. 358 |
| From Weverton along highway north to point 2.7 miles north of Rohersville, thence east to Middletown, thence south to Jefferson. | |
| Weverton, 1.7 miles north of, 400 feet north of stream, road fork west at top of hill, road fork east, on top of stone at blacksmith shop; point marked "545"----- | 544. 53 |
| Brownsville, at road fork east, northwest corner of post office; aluminum tablet stamped "533"----- | 532. 182 |
| Gapland, 100 feet north of station, on rock near telephone pole; point marked "619.5"----- | 619. 11 |
| Rohersville, 10 feet south of main entrance of post office, southeast corner of front face; aluminum tablet stamped "624"----- | 623. 866 |
| Rohersville, 1.8 miles north of, on northeast corner of southwest abutment of bridge over stream; point marked "480"----- | 479. 71 |
| Rohersville, 2.8 miles north of, 400 feet west of T road, 30 feet north of road, in stone; aluminum tablet stamped "Maryland 508 Adj"----- | 507. 388 |
| Rohersville, 5 miles northeast of, at top of mountain, in front of house at second-class crossroads, 4 feet north of road, on top of stone; point marked "1059"----- | 1, 058. 45 |
| Bollvar, at crossroads, at southwest corner of stone-arch bridge over stream, on top of rock; point marked "517"----- | 516. 96 |

| | |
|--|-----------------|
| Bolivar, 1.1 miles northeast of, at foot of hill, at southwest end of culvert over small stream, in front of brick house, on top of land-line stone; point marked "445.6"----- | Feet. 445.16 |
| Middletown, in front face of post-office building; aluminum tablet stamped "Maryland 547 Adj"----- | 546.623 |
| Middletown, 2.7 miles south of, at foot of hill near small stream, 200 feet west of house, 250 feet north of creamery, 15 feet west of road, in top of large rock; aluminum tablet stamped "Maryland 482 Adj"----- | 481.492 |
| Middletown, 4.6 miles south of, at foot of hill, at second-class cross-roads, on northeast abutment of bridge over stream; point marked "432"----- | 431.25 |

From Harpers Ferry north to Antietam Creek.

| | |
|---|---------|
| Harpers Ferry, 0.9 mile north of, 300 feet east of lock on canal, at second-class road fork northeast, 10 feet west of road, on top of large rock; point marked "276"----- | 275.66 |
| Harpers Ferry, 3.3 miles north of, at foot of hill, on northwest abutment of bridge over stream; point marked "422"----- | 421.28 |
| Harpers Ferry, 4.2 miles north of, at crossroads near schoolhouse and church, in front face of schoolhouse, 4 feet east of main entrance; aluminum tablet stamped "Maryland 623 Adj"----- | 622.904 |
| Harpers Ferry, 6.6 miles north of, on northwest corner of Chesapeake & Ohio Canal lock; point marked "300"----- | 299.93 |
| Harpers Ferry, 7.9 miles north of, at Antietam Creek, in northwest end of west abutment of Chesapeake & Ohio Canal aqueduct; aluminum tablet stamped "Md. 301 Adj"----- | 300.270 |

From Sharpsburg northeast to Keedysville, thence southeast to point 2.7 miles north of Rohersville.

| | |
|---|---------|
| Sharpsburg, in front face of post-office building, 20 feet north of main entrance; aluminum tablet stamped "Maryland 413 Adj"----- | 412.857 |
| Sharpsburg, 1.4 miles northeast of, at foot of hill, 300 feet southwest of tollgate; nail in center of north side of iron bridge over Antietam Creek, marked "337"----- | 336.73 |
| Keedysville, 50 feet north of railroad, in front face of hotel; aluminum tablet stamped "Maryland 404 Adj"----- | 403.467 |
| Keedysville, 1 mile southeast of, at road fork north, at arch bridge over small stream; center of stone marked "402.5"----- | 402.06 |

From Myersville south to Middletown.

| | |
|--|---------|
| Myersville, 2.3 miles south of, north-south road at T road east, in northeast corner between county road and railroad, on top of large rock; chiseled square marked "G.S. □ 644 B.M."----- | 643.84 |
| Mount Tabor, in front of station; top of rail----- | 584.3 |
| Mount Tabor, 330 feet southwest of, in northeast corner of Peter Leatherman's brick house; aluminum tablet stamped "588 Md"----- | 587.538 |

MARTINSBURG QUADRANGLE.¹

[Latitude 39° 15'–39° 30'; longitude 77° 45'–78°.]

From Antietam west along highway to Shepherdstown, W. Va., thence northeast to Sharpsburg, thence north to Grimes.

| | |
|---|--------|
| Shepherdstown, 1.3 miles northeast of, 150 feet west of second-class road crossing, 100 feet west of barn, on northwest abutment of culvert of Norfolk & Western Ry.; point marked "430"----- | 429.36 |
|---|--------|

¹ For elevations in Martinsburg quadrangle in West Virginia see bulletin in preparation.

| | |
|---|------------------|
| Grimes, 1.2 miles south of, 500 feet south of county-road crossing, west of railroad at cut, on large rock; chiseled square marked "G.S.□B.M. 415"----- | Feet. 414. 88 |
| Grimes, 2.2 miles south of, on east side of railroad, in north mouth of cut, on top of rock; chiseled square marked "G.S.□B.M. 412"----- | 411. 24 |
| Mondel, in front of station; top of rail----- | 418. 6 |
| Mondel, 2 miles south of, on east side at north end of cut, on top of rock; chiseled square marked "G.S.□B.M. 458"----- | 457. 17 |
| Sharpsburg, in front face of post-office building, 20 feet north of main entrance; aluminum tablet stamped "Adj 413"----- | 412. 857 |

Emmitsburg, Hagerstown, Taneytown, and Williamsport quadrangles.

CARROLL, FREDERICK, AND WASHINGTON COUNTIES.

The following elevations were determined by primary leveling extended from Baltimore to Hagerstown, and from the Baltimore & Ohio R. R. precise-level line from Relay to Washington Junction. The leveling was done in 1908, as follows: In Taneytown quadrangle and most of Emmitsburg quadrangle, by C. H. Semper; in Hagerstown and Williamsport quadrangles and part of Emmitsburg quadrangle, by J. M. Harris. Additional leveling was done by Semper in Hagerstown and Williamsport quadrangles in 1910.

TANEYTOWN QUADRANGLE.¹

[Latitude 39° 30'–39° 45'; longitude 77°–77° 15'.]

From Westminster west along Western Maryland Ry. to Detour.

| | |
|--|-------------------|
| Westminster, in fifth step of main entrance to courthouse; bronze tablet stamped "774"----- | Feet. 774. 337 |
| Spring Mills, in front of station sign; top of rail----- | 607. 0 |
| Spring Mills, 250 feet west of station, at east end of north side of railroad culvert, on top of mud wall; chiseled square marked "U.S.□B.M. 602"----- | 602. 11 |
| Avondale, in front of station; top of rail----- | 580. 3 |
| Avondale, 210 feet west of station, on north side of track, on top of railroad culvert; chiseled square marked "U.S.□B.M. 559"----- | 558. 57 |
| Medford, in northwest corner of foundation of C. E. Engle's building at station; aluminum tablet stamped "531"----- | 531. 201 |
| Medford, in front of station; top of rail----- | 529. 8 |
| Wakefield, in front of station; top of rail----- | 515. 7 |
| New Windsor, 1.4 miles east of, south of track, on top of railroad culvert; chiseled square marked "U.S.□B.M. 501"----- | 500. 75 |
| New Windsor, 0.3 mile east of, north side of east abutment of railroad bridge, in back wall; aluminum tablet stamped "453"----- | 453. 225 |
| New Windsor, in front of station; top of rail----- | 445. 5 |
| Linwood, in front of station; top of rail----- | 415. 6 |
| Union Bridge, 0.8 mile east of, north side of east abutment of railroad bridge, on top of retaining wall; chiseled square marked "U.S.□B.M. 405"----- | 404. 36 |
| Union Bridge, at railroad station, in front face at southeast corner of First National Bank; aluminum tablet stamped "402"----- | 402. 004 |
| Union Bridge, in front of station; top of rail----- | 399. 0 |

¹ For elevations in Taneytown quadrangle in Pennsylvania see Bull. 515.

| | |
|--|------------------|
| Middleburg, 1.5 miles east of, on north side of railroad culvert, in top of bridge seat of east abutment; aluminum tablet stamped "398"--- | Feet. 398.180 |
| Middleburg, in front of station; top of rail----- | 461.4 |
| Bruceville, in front of station; top of rail----- | 452.9 |
| Detour, in front of station; top of rail----- | 348.9 |

From Ladiesburg northeast along Northern Central Ry. to Kingsdale.

| | |
|---|---------|
| Ladiesburg, in front of station; top of rail----- | 482.3 |
| Ladiesburg, 1.6 miles north of, south abutment of steel railway bridge, east of track, in top of retaining wall; aluminum tablet stamped "403"----- | 402.880 |
| Bruceville, 50 feet north of overhead crossing of Western Maryland Ry., 6 feet east of track, on concrete foundation to brick gasoline house; chiseled square marked "U.S.□B.M. 433"----- | 433.22 |
| Bruceville, in front of station; top of rail----- | 433.9 |
| Sharretts, in front of station sign; top of rail----- | 418.7 |
| Crabster, in front of station sign at crossing; top of rail----- | 513.2 |
| Taneytown, Baltimore Street crossing railroad, east of track, south of road, on foundation of railroad-crossing sign; chiseled square marked "U.S.□B.M. 501"----- | 500.51 |
| Taneytown, in southwest corner of Central Hotel; aluminum tablet stamped "524"----- | 523.276 |
| Taneytown, in front of station; top of rail----- | 500.4 |
| Taneytown, 1.9 miles north of, at railroad crossing, 10 feet east of track, north of road, in foundation of crossing sign; aluminum tablet stamped "404"----- | 493.583 |
| Galt, at station, west of track, south of road, on foundation of crossing sign; chiseled square marked "U.S.□B.M. 535"----- | 534.27 |
| Piney Creek, in front of station; top of rail----- | 513.2 |

From Kingsdale southeast to Union Mills.

| | |
|--|---------|
| Kingsdale, 3.6 miles southeast of, on Baltimore Pike, in northwest corner of front face of F. T. Brown's brick house; aluminum tablet stamped "705"----- | 704.372 |
| Union Mills, in foundation on northwest side of Shriver's grain mill, 2 feet from corner; bronze tablet stamped "546"----- | 544.345 |

EMMITSBURG QUADRANGLE.¹

[Latitude 39° 30'–39° 45'; longitude 77° 15'–77° 30'.]

From Walkersville northeast along Northern Central Ry. to Ladiesburg.

| | |
|---|---------|
| McAleer, in front of station; top of rail----- | 344.1 |
| Woodsboro, in front of station; top of rail----- | 409.9 |
| Woodsboro, at railway station, in northeast corner of foundation of flour mill; aluminum tablet stamped "411"----- | 411.10 |
| Le Gore, in front of station; top of rail----- | 434.0 |
| New Midway, at station, at road crossing, 8 feet east of track, 6 feet north of highway, in foundation of railway crossing sign; aluminum tablet stamped "462"----- | 461.456 |
| New Midway, in front of station; top of rail----- | 463.4 |

¹ For elevations in Emmitsburg quadrangle in Pennsylvania see Bull. 515.

From Detour west and northwest along Western Maryland Ry. to Thurmont and Buena Vista Spring.

| | |
|---|------------------|
| Detour, 1,300 feet west of station, at road crossing, north of track, on outcrop; chiseled square marked "U.S. □ B.M. 341"----- | Feet. 340. 80 |
| Detour, 0.35 mile north of, at railroad crossing, in east face about 6 feet from southeast corner of stone foundation to E. D. Diller's house; aluminum tablet stamped "Prim. Trav. Sta. No. 1, 447"--- | 447. 116 |
| Detour, 1.5 miles west of, on south wall of west abutment of railroad bridge over river; chiseled square marked "U.S. □ B.M. 335"----- | 334. 84 |
| Detour, 2.7 miles west of, 20 feet north of track, east of overhead bridge, on large rock; chiseled square marked "U.S. □ B.M. 407"--- | 406. 39 |
| Rocky Ridge, in front of station; top of rail----- | 400. 2 |
| Rocky Ridge, opposite railroad station, in northwest corner of foundation of Robert Biggs's brick house; aluminum tablet stamped "397"--- | 396. 938 |
| Loys, railroad crossing at station; top of rail----- | 356. 2 |
| Graceham, 700 feet east of station, in west abutment to railroad bridge over county road; aluminum tablet stamped "442"----- | 441. 698 |
| Graceham, in front of station; top of rail----- | 448. 5 |
| Thurmont, 2.1 miles northwest of, high bridge 97; on top of south end of west abutment; chiseled square marked "U.S. □ B.M. 715"--- | 714. 32 |
| Thurmont, 2.9 miles northwest of, steel bridge over Owens Creek, in top of mud wall at south side of west abutment; aluminum tablet stamped "779"----- | 779. 048 |
| Thurmont, 4 miles northwest of, at west end of switch, south of track, on large rock; chiseled square marked "U.S. □ B.M. 889"----- | 888. 96 |
| Deerfield, in front of station; top of rail----- | 959. 6 |
| Deerfield, 1.2 miles northwest of, railroad culvert, on top of mud wall at south end of west wall; chiseled square marked "U.S. □ B.M. 1064"----- | 1, 063. 38 |
| Sabillasville, in southeast corner of front face of St. Marks Lutheran Church; aluminum tablet stamped "1108"----- | 1, 107. 481 |
| Sabillasville, in front of station; top of rail----- | 1, 139. 8 |
| Highfield, in front of station; top of rail----- | 1, 390. 0 |
| Buena Vista Spring, in front of station; top of rail----- | 1, 339. 7 |

From Thurmont south to Charlesville.

| | |
|--|----------|
| Thurmont, in front of station; top of rail----- | 517. 3 |
| Thurmont, in east face at northeast corner of Thurmont National Bank Building; aluminum tablet stamped "Prim. Trav. Sta. No. 6, 523"----- | 522. 880 |
| Thurmont, 2 miles south of, at railroad crossing, 40 feet west of track, on north margin of road, on top of boulder; chiseled square marked "U.S. □ B.M. 454"----- | 453. 97 |
| Catoctin, in front face of stone furnace building, north side of door; aluminum tablet stamped "497"----- | 496. 553 |
| Lewistown, in front face at north corner of stone house just south of church; aluminum tablet stamped "402"----- | 402. 034 |
| Lewistown, in front of station; top of rail----- | 378. 9 |
| Lewistown, 1.1 miles south of, on top of mud wall at east end of south wall of concrete railroad culvert; chiseled square marked "U.S. □ B.M. 403"----- | 402. 87 |

From Rocky Ridge north to Emmitsburg, thence west to Sabillasville.

| | Feet. |
|--|-----------|
| Motters, in front of station; top of rail..... | 445.0 |
| Motters, in front of station, in southeast corner of foundation of hay scales; aluminum tablet stamped "445"..... | 445.052 |
| Motters, 0.7 mile north of, cattle pass under railroad, on top of east side of south wall; chiseled square marked "U.S. B.M. 438"..... | 437.31 |
| Emmitsburg, in front of station; top of rail..... | 416.4 |
| Emmitsburg, in front face of Dutch Reformed Church; aluminum tablet stamped "450"..... | 449.420 |
| Emmitsburg, 1.4 miles west of, 50 feet east of crossroads at school-house, on north side of road, on top of large boulder; chiseled square marked "U.S. B.M. 442"..... | 441.46 |
| Emmitsburg, 2.3 miles west of, 280 feet west of brick house, south side of road, on large boulder; chiseled square marked "U.S. B.M. 643"..... | 642.66 |
| Emmitsburg, 4.5 miles west of, 10 feet north of road, on top of large rock; chiseled square marked "U.S. B.M. 1176"..... | 1,175.00 |
| Emmitsburg, 5.3 miles west of, at William Miller's house, in northeast corner of stone foundation; aluminum tablet stamped "1150 Md"..... | 1,149.383 |
| Emmitsburg, 5.5 miles west of, in forks of road, on top of small boulder; chiseled square marked "U.S. B.M. 1082"..... | 1,081.77 |
| Emmitsburg, 6 miles west of, north of road, on top of large boulder; chiseled square marked "U.S. B.M. 1008"..... | 1,007.44 |
| Emmitsburg, 7.1 miles west of, north of road, 900 feet west of stream, halfway up hill, on top of large boulder; chiseled circle marked "U.S. B.M. 1041"..... | 1,040.47 |

HAGERSTOWN QUADRANGLE.¹

[Latitude 39° 30'–39° 45'; longitude 77° 30'–77° 45']

From Hagerstown north along Cumberland Valley R. R. to Maugansville.

| | |
|---|---------|
| Hagerstown, crossing of Cumberland Valley and Western Maryland railroads | 590.8 |
| Hagerstown, 1.1 miles north of, under overhead bridge, west side of track; on rock marked "U.S. B.M. 612"..... | 611.42 |
| Hagerstown, 2.1 miles north of, 120 feet south of milepost 72, on east side of track; top of large stone marked "U.S. B.M. 637"..... | 637.16 |
| Maugansville, 0.6 mile south of, 212 feet south of milepost 71, 10.6 feet west of track, on top of large rock; aluminum tablet stamped "636"..... | 636.142 |
| Maugansville, 0.2 mile south of station, west side of track; copper bolt in concrete culvert (railroad bench mark)..... | 617.671 |
| Maugansville, in front of station; top of rail..... | 614.6 |

From Buena Vista Spring west along Western Maryland Ry. to Hagerstown.

| | |
|---|----------|
| Lake Royer, 0.3 mile west of Buena Vista Spring; surface of water May 22, 1908..... | 1,312.8 |
| Pen Mar, 175 feet east of, 10 feet south of track opposite store, on top of large boulder; chiseled square marked "U.S. B.M. 1248"..... | 1,247.18 |
| Pen Mar, in front of station; top of rail..... | 1,244.1 |
| Blue Mountain, in front of station; top of rail..... | 1,177.7 |

¹ For elevations in Hagerstown quadrangle in Pennsylvania see Bull. 515.

| | |
|---|----------------------|
| Blue Mountain, in northwest corner of brick railroad station; aluminum tablet stamped "1189 Md"----- | Feet. 1, 188. 618 |
| Blue Mountain, 1 mile west of, 40 feet south of track, on top of large bowlder; chiseled square marked "U.S.□B.M. 1106"----- | 1, 106. 07 |
| Blue Mountain, 2.1 miles west of, 6 feet south of track, on top of large bowlder; chiseled square marked "U.S.□B.M. 1025"----- | 1, 024. 86 |
| Edgemont, in front of station; top of rail----- | 965. 2 |
| Edgemont, 225 feet west of station, 40 feet south of track, in north foundation wall of Bachtell's store and post office; aluminum tablet stamped "961 Md"----- | 960. 128 |
| Smithsburg, in front of station; top of rail----- | 798. 0 |
| Smithsburg, 150 feet west of station, in southeast corner of brick warehouse of Western Maryland Ry.; aluminum tablet stamped "800 Md"----- | 799. 559 |
| Cavetown, in front of station; top of rail----- | 751. 0 |
| Cavetown, 1 mile west of, 15 feet east of whistle post, 8 feet south of track, on top of large bowlder; chiseled square marked "U.S.□B.M. 697"----- | 697. 00 |
| Cavetown, 1.7 miles west of, 8 feet south of track, 400 feet west of milepost 80, on rock in bank; chiseled square marked "U.S.□B.M. 651"----- | 650. 98 |
| Chewsville, in front of station; top of rail----- | 632. 6 |
| Chewsville, in north face at northwest corner of brick railroad station; aluminum tablet stamped "636 Md"----- | 635. 514 |
| Chewsville, 1.1 miles west of, 300 feet east of overhead road bridge, 4 feet north of track, on top of large bowlder; chiseled square marked "G.S.□B.M. 580"----- | 579. 12 |
| Security, in front of station; top of rail----- | 510. 1 |
| Security, 0.4 mile west of, south of track, in top of east back wall of bridge over Marsh Run; aluminum tablet stamped "508 Md"----- | 507. 747 |
| Rissell, in front of station; top of rail----- | 510. 5 |
| Potomac Avenue, in front of station; top of rail----- | 564. 2 |
| North Junction, main line of Western Maryland Ry. and north-bound track of Altenwald cut-off, at frog point; top of rail----- | 589. 3 |
| North Junction, intersection of Cumberland Valley and Western Maryland railroads; top of rail----- | 590. 2 |
| Hagerstown, corner of Washington and Jonathan streets, on Jonathan Street side of courthouse; water table (C. & G. S. b. m. A)----- | 552. 035 |

From Edgemont north along Western Maryland Ry. to Midvale.

| | |
|--|--------|
| Shockeys, in front of sign; top of rail----- | 778. 2 |
|--|--------|

From Smithsburg south to Myersville, thence northwest to Hagerstown.

| | |
|--|-------------|
| Smithsburg, 2.5 miles south of, on top of Blue Mountain, in northwest corner of roads opposite a 2-story frame house, on top of large rock; chiseled square marked "G.S.□B.M. 1512"----- | 1, 511. 06 |
| Smithsburg, 3.5 miles south of, 150 feet west of road, at southeast corner of frame schoolhouse, in east face of stone foundation; aluminum tablet stamped "1335 Md"----- | 1, 334. 073 |
| Smithsburg, 4.6 miles south of, east of road, 50 feet north of 2-story stone house, on top of bowlder; chiseled square marked "G.S.□B.M. 1117"----- | 1, 116. 44 |

| | |
|--|------------------|
| Williamsport, 7.7 miles west of, two canal locks, 10 feet south of gate, in top of Lock 46, east wall; aluminum tablet stamped "372"----- | Feet. 371.309 |
| Williamsport, 7.8 miles west of, on top course of stone of second canal lock above dam 5; chiseled square (Coast and Geodetic Survey bench mark No. VI)----- | 371.358 |

From St. James School south to Grimes.

| | |
|--|---------|
| St. James, in front of station; top of rail----- | 469.2 |
| St. James, opposite station, 50 feet from track, under porch of two-story frame cottage; aluminum tablet stamped "473 Md"----- | 472.715 |
| St. James, 0.9 mile south of, on northeast corner of south bridge seat of railroad bridge 717; chiseled square marked "G.S.□B.M. 431"----- | 430.81 |
| Spielman, in front of station; top of rail----- | 408.2 |
| Spielman, 0.2 mile south of, railroad bridge 712, on northeast corner of south bridge seat; chiseled square marked "G.S.□B.M. 404"----- | 403.45 |
| Grimes, in front of sign; top of rail----- | 398.8 |
| Grimes, 0.4 mile south of, railroad bridge 705, in west end of north bridge seat; aluminum tablet stamped "391 Md"----- | 390.628 |

From Hagerstown southwest along Cumberland Valley R. R. to Potomac River bridge.

| | |
|---|---------|
| Hagerstown, 3.3 miles west of, 15 feet north of railroad track, on top of large rock; chiseled square marked "G.S.□B.M. 548"----- | 547.440 |
| Halfway, 150 feet west of railroad, in front face at southwest corner of R. P. Beckley's concrete store, on Williamsport pike; aluminum tablet stamped "539 Md"----- | 538.764 |
| Halfway, in front of station; top of rail----- | 542.7 |
| Halfway, 0.6 mile southwest of, 15 feet from track, on north side of cut between milepost 78 and semaphore, on top of rock; chiseled square marked "G.S.□B.M. 525"----- | 524.710 |
| Halfway, 1.7 miles southwest of, 325 feet west of milepost 79, in north bank of cut, on top of large rock; chiseled square marked "G.S.□B.M. 487"----- | 487.159 |
| Halfway, 2.9 miles southwest of, between county road and railroad, in center of south head wall of concrete box culvert under railroad; aluminum tablet stamped "447 Md"----- | 446.641 |
| Williamsport station, in front of; top of rail----- | 455.0 |
| Williamsport, 0.4 mile southwest of, north of railroad, about 300 feet west of milepost 81, on top of large rock in bank of cut; chiseled square marked "G.S.□B.M. 436"----- | 436.00 |
| Williamsport, 1.3 miles southwest of, on south end of east abutment of back wall of Cumberland Valley R. R. bridge 82-1; chiseled square marked "G.S.□B.M. 382"----- | 381.744 |

Accident, Flintstone, Frostburg, Grantsville, Hancock, Oakland, and Pawpaw quadrangles.

ALLEGANY, GARRETT, AND WASHINGTON COUNTIES.

The elevations in the following list were determined by primary leveling extended from various bench marks of the Coast and Geodetic Survey transcontinental line.

The leveling in Frostburg and Flintstone quadrangles was done mostly in 1897 by Hargraves Wood; that in Grantsville, Oakland, Accident, and part of that in Pawpaw and Hancock quadrangles was done in 1898 by C. B. Bailey and Wood; and the remainder of the work in Pawpaw and Hancock quadrangles was done in 1899 by C. M. Smith.

HANCOCK QUADRANGLE.¹

[Latitude 39° 30'–39° 45'; longitude 78°–78° 15'.]

From Hancock west along Baltimore pike to Green Ridge.

| | |
|---|-------------------|
| Hancock, on coping stone at middle of north wall of Chesapeake & Ohio Canal aqueduct, about 600 feet east of bridge; Coast and Geodetic Survey bench mark stamped "1878 F"----- | Feet. 420. 714 |
| Hancock, in front of bank, on stone doorsill; bronze tablet stamped "448 C"----- | 448. 023 |
| Hancock, 5.15 miles west of, 0.25 mile east of Harveys, 100 feet west of road to Woodmont, south of pike, in solid rock; bronze tablet stamped "946 C"----- | 945. 453 |

From Lock 50 west to Clear Spring, thence north to Sylvan,¹ Pa. (double targeted spur line).

| | |
|---|----------|
| Lock 50, Chesapeake & Ohio Canal, close to watch house, on west end of north side; cut in top stone----- | 404. 232 |
| Lock 50, Chesapeake & Ohio Canal, northeast wing; aluminum tablet stamped "402 C"----- | 402. 235 |
| Cherry Run, W. Va., 1.5 miles north and 0.75 mile west of, in south side of southwest corner of wing wall of Chesapeake & Ohio Canal viaduct over Licking Creek, 4 feet from west end of wall, about 2 feet below coping, in second tier of masonry under coping; aluminum tablet stamped "Maryland 402 C"----- | 401. 800 |

PAWPAW QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 78° 15'–78° 30'.]

From Pratt along highway to Little Orleans.

| | |
|--|-------------|
| Green Ridge, south of pike, west of road to Little Orleans, in small ledge of rock at top of ridge; bronze tablet stamped "1204 C"----- | 1, 203. 897 |
| Little Orleans, Chesapeake & Ohio Canal aqueduct over Fifteenmile Creek, in north end of east coping; bronze tablet stamped "459 C"----- | 459. 262 |
| Little Orleans, aqueduct over Fifteenmile Creek; square cut in coping stone (C. & G. S. b. m. XIII)----- | 459. 685 |

FLINTSTONE QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 78° 30'–78° 45'.]

From Cumberland along old national pike to Pratt.

| | |
|--|----------|
| Sixmile House, in northeast corner of foundation; copper bolt stamped "881 C"----- | 881. 501 |
| Flintstone, Dr. Robinson's house, northwest corner of foundation; bronze tablet stamped "828 C"----- | 828. 403 |

¹ For elevations in Hancock quadrangle in Pennsylvania see Bull. 515.

| | |
|---|-------------------|
| Flintstone, 2.75 miles east of top of Pollah Mountain, opposite telegraph pole; stone stamped "1381"----- | Feet. 1,381.85 |
| Pratt, 0.25 mile east of former post office, 150 feet west of Robinett's old house, south of road, in ledge of rock; aluminum tablet stamped "938 C"----- | 938.23 |

From Flintstone south along Oldtown road to Oldtown.

| | |
|--|---------|
| Flintstone, sixth crossing of Town Creek from, 2 feet above grade of creek; copper bolt in ledge west of road to Oldtown, about 0.06 mile northeast of L. T. Shryock's; stamped "666 C"----- | 666.425 |
|--|---------|

From Lock 67 west along Chesapeake & Ohio Canal to Cumberland.

| | |
|---|---------|
| Lock 67 of Chesapeake & Ohio Canal, on coping stone; Coast and Geodetic Survey bench mark XV----- | 540.393 |
| Oldtown, 15 feet east of west end of Lock 70, in coping stone of south wall; copper bolt stamped "564 C"----- | 564.208 |

FROSTBURG QUADRANGLE.¹

[Latitude 39° 30'–39° 45'; longitude 78° 45'–79°.]

From Cumberland north and west along Cumberland & Pennsylvania R. R. via Mount Savage to Frostburg.

| | |
|--|-----------|
| Cumberland, coping of feed lock of canal; Coast and Geodetic Survey bench mark stamped "I.B.M., U.S.C. & G.S., 1878"----- | 623.766 |
| Cumberland, northeast corner of courthouse, in top of stonework; bronze tablet stamped "688 C"----- | 687.797 |
| Mount Savage, 1,000 feet east of station, in southwest abutment of high bridge over Sulphur Creek; copper bolt stamped "1198 C"--- | 1,198.048 |
| Frostburg, 50 feet east of tunnel on Cumberland & Pennsylvania R. R., in south side of rock cut; bronze tablet stamped "1929 C"--- | 1,928.718 |

From Frostburg south and east along Cumberland & Pennsylvania R. R. to Cumberland.

| | |
|---|-----------|
| Vale Summit, 250 feet west of station and 100 feet south of Georges Creek & Cumberland R. R., in large boulder; copper bolt stamped "1993 C"----- | 1,993.113 |
| Clarysville; platform at station----- | 1,637.5 |
| Park station (Casino); Georges Creek & Cumberland R. R. platform----- | 756.8 |

GRANTSVILLE QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 79°–79° 15'.]

From Frostburg via Piney Grove, New Germany, and Crabtree to Bloomington.

| | |
|---|-----------|
| Piney Grove, 0.5 mile east of, near east corner of large house north of pike, 200 feet west of Twomile Run; bronze tablet stamped "2424 C"----- | 2,424.125 |
| New Germany, 0.1 mile east of, 100 feet east of Poplar Lick Run, 20 feet south of road to Oakland at intersection of road to old mill, in ledge of rock; bronze tablet stamped "2472 C"----- | 2,471.733 |
| Floyd, 0.12 mile east of railroad station (known as Frankville), 0.09 mile west of milepost "214 to Baltimore," south of Baltimore & Ohio R. R., at east end of frame house, in large rock; bronze tablet stamped "1693"----- | 1,693.121 |

¹ For elevations in Frostburg quadrangle in Pennsylvania see Bull. 515.

| | |
|--|--------------------|
| Floyd , 2.6 miles east of, 100 feet east of signal at station, south of Baltimore & Ohio R. R. bench mark in Laffey Rock; bronze tablet stamped "1380 C"----- | Feet. 1,380.441 |
|--|--------------------|

From Piney Grove west through Grantsville to Keyser.

| | |
|--|-----------|
| Grantsville , Farmers' Hotel, in southeast corner stone, opposite mile-post marked "14 mi. to Frostburg" and "106 mi. to Wheeling"; aluminum tablet stamped "2299 C"----- | 2,299.405 |
| Keyser , northeast corner of stone foundation wall of former post-office building; bronze tablet stamped "2879 C"----- | 2,880.165 |

ACCIDENT QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 79° 15'–79° 30'.]

From New Germany southwest via Meadow Mountain Road to Thayerville.

| | |
|--|-----------|
| Thayerville , 5.8 miles east of, north of Meadow Mountain road, near Meadow Mountain Run, in rock 500 feet northeast of old sawmill site; bronze tablet stamped "2573"----- | 2,573.506 |
|--|-----------|

From Thayerville north through McHenry, Hoyes, and Accident to Keyser.

| | |
|---|-----------|
| Hoyes , southeast corner of foundation wall of Catholic Church; aluminum tablet stamped "2611 C"----- | 2,611.818 |
| Accident , in northeast corner of foundation of English Lutheran Church; aluminum tablet stamped "2394 C"----- | 2,395.001 |

From McHenry through Sang Run, Friendsville, and Shellsport to Somersfield, Pa., thence southeast to Keyser.

| | |
|---|-----------|
| Friendsville , southeast corner of First Avenue and Maple Street, in east foundation wall of building owned by L. E. Friend; aluminum tablet stamped "1501 C"----- | 1,501.040 |
| Sang Run , in abutment of bridge over Youghiogheny River; bronze tablet stamped "1989 C"----- | 1,988.409 |
| Oakton , Pennsylvania-Maryland boundary; base of monument----- | 2,362.37 |

OAKLAND QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 79° 15'–79° 30'.]

From Oakland northeast to Thayerville.

| | |
|--|-----------|
| Oakland , 1.25 miles west of, top of southwest abutment of Baltimore & Ohio R. R. bridge over Youghiogheny River; Coast and Geodetic Survey bench mark K----- | 2,375.518 |
| Oakland , in courthouse on top of south meridian stone, copper bolt stamped "2461 C"----- | 2,460.369 |
| Oakland , southwest corner stone of courthouse; aluminum tablet stamped "2473 C"----- | 2,472.387 |

From Oakland south to Redhouse, thence east to Gorman, thence north through Kearney and Deer Park to Mountain Lake.

| | |
|--|-----------|
| Redhouse , southwest corner stone of school building; aluminum tablet stamped "2557 C"----- | 2,556.966 |
| Redhouse , 2.6 miles east of, four corners on top of Backbone Mountain, 10 feet south of spring, on boulder; chiseled square----- | 3,073.58 |
| Gorman , highway bridge over Potomac River, at west end of north abutment; aluminum tablet stamped "2312 C"----- | 2,312.294 |

| | |
|---|-------------|
| Kearney, 2.2 miles northeast of, 900 feet west of Taskers Corners, 600 feet east-southeast from barn in Jerry Tasker's upper field; Feet. aluminum tablet stamped "2720 C"----- | 2, 720. 351 |
| Deer Park, between two Baltimore & Ohio R. R. stations; 725 feet east of Deer Park Hotel station, top of southwest wing wall of abutment of stone culvert; aluminum tablet stamped "2447 C"-- | 2, 447. 184 |
| Mountain Lake, 3 miles east of Oakland railroad bridge over Little Youghiogheny River, on top of southwest corner of west abutment; point marked "B□M" (C. & G. S. b. m. XXII)----- | 2, 404. 324 |

At Thayerville.

| | |
|---|-------------|
| Thayerville, 700 feet from, south of Meadow Mountain road, 150 feet east of Thayerville-Oakland road, in bowlder; bronze tablet stamped "2493 C"----- | 2, 493. 463 |
|---|-------------|

APPENDIX A.

ELEVATIONS ADJUSTED BY THE COAST AND GEODETIC SURVEY FROM PRECISE LEVELING.

Annapolis, Antietam, Baltimore, Betterson, Elk Garden, Elkton, Ellicott, Flintstone, Frostburg, Gunpowder, Hagerstown, Hancock, Havre de Grace, Ijamsville, Keyser, Laurel, Mount Airy, Oakland, Parkton, Pawpaw, Relay, Rockville, Seneca, Washington, and Williamsport quadrangles.

ALLEGANY, ANNE ARUNDEL, BALTIMORE, CARROLL, CECIL, FREDERICK, GARRETT, HARFORD, HOWARD, MONTGOMERY, PRINCE GEORGES, AND WASHINGTON COUNTIES.

The following descriptions and elevations are taken from reports of the Coast and Geodetic Survey and from lists furnished by the Baltimore & Ohio and Pennsylvania railroads; the data taken from the Coast and Geodetic Survey reports are republished by permission of the superintendent of that bureau. The bench marks were established by the Coast and Geodetic Survey, by the Baltimore & Ohio R. R., and by the Pennsylvania R. R., from precise leveling, and their elevations are in agreement with the 1912 adjustment of the Coast and Geodetic Survey.

ANNAPOLIS QUADRANGLE.

[Latitude 38° 45'–39°; longitude 76° 15'–76° 30'.]

At Annapolis.

| | |
|---|----------------|
| Annapolis, Naval Academy, on front doorsill of house No. 5 Stribling Row, 7½ inches from west doorframe, 2 inches from edge of step, 14 inches from west end of step (C. & G. S. b. m. 5 S. R.)---- | Feet. 9.409 |
| Annapolis, at northwest corner of house No. 1 Stribling Row, about 1 meter above ground; on projecting base (C. & G. S. b. m. 1 S. R.)----- | 17.203 |
| Annapolis, 8 feet southwest of front of observatory building; on center of top of stone pier (C. & S. b. m. Obs.)----- | 23.012 |
| Annapolis, on northeast side of base of Herndon Monument, midway of length, about 2 inches out from face of shaft, about 3 feet above ground (C. & S. b. m. Hern.)----- | 29.196 |
| Annapolis, on southwest corner of fourth granite block supporting iron fence around the governor's house, counting northeast from southwest corner; cross cut in stone (C. & G. S. b. m. No. XIII)---- | 41.378 |
| Annapolis, opposite Washington Street market, west doorsill of church on West Street; cut in east corner (C. & G. S. b. m. No. XII)----- | 42.854 |

ANTIETAM QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 77° 30'–77° 45'.]

Near Keedysville.

| | |
|--|------------------|
| Keedysville, 0.5 mile south of, on south abutment of Baltimore & Ohio R. R. bridge 26, on northwest corner of west capstone; cross cut (C. & G. S. b. m. B)----- | Feet. 391.564 |
| From point near Washington Junction along Baltimore & Ohio R. R. to Harpers Ferry. | |
| Washington Junction, 0.9 mile east of, south side of tracks near milepost marked "Washington, 42 miles"; top of vertical rail section (B. & O. R. R. b. m. 43)----- | 234.107 |
| Point of Rocks, south side of tracks, in foundation arch at east end of Point of Rocks tunnel; copper bolt (B. & O. R. R. b. m. 44A)--- | 233.156 |
| Catoctin, 1 mile southeast of, opposite milepost marked "Baltimore, 70 miles"; top of vertical rail section between tracks (B. & O. R. R. b. m. 45)----- | 233.257 |
| Catoctin, opposite milepost 71; top of vertical rail section between tracks (B. & O. R. R. b. m. 46)----- | 239.068 |
| Catoctin, 1 mile northwest of, opposite milepost 72; top of vertical rail section between tracks (B. & O. R. R. b. m. 47)----- | 242.644 |
| Catoctin, 2 miles west of, 2 miles east of Brunswick, opposite milepost 73; top of vertical rail section between tracks (B. & O. R. R. b. m. 48)----- | 245.721 |
| Brunswick, 1.5 miles from, opposite milepost 74, at east end of Brunswick yards; top of vertical rail section between tracks (B. & O. R. R. b. m. 49)----- | 247.545 |
| Brunswick, 0.5 mile east of, in Brunswick yards, opposite milepost 75; top of vertical rail section between tracks (B. & O. R. R. b. m. 50)----- | 247.713 |
| Brunswick, 0.5 mile west of, in southwest corner of culvert 39 G; copper bolt (B. & O. R. R. b. m. 51)----- | 250.426 |
| Knoxville, 1 mile east of, opposite milepost 77; top of vertical rail section between tracks (B. & O. R. R. b. m. 52)----- | 259.530 |
| Knoxville, north side of tracks near milepost 78; top of vertical rail section (B. & O. R. R. b. m. 53)----- | 258.044 |
| Weverton, 2 miles west of, west end of north end wall of culvert 39 I; copper bolt (B. & O. R. R. b. m. 54)----- | 258.067 |
| Weverton, 1.3 miles west of, 100 feet east of milepost 80, on north side of tracks, in native rock; copper bolt (B. & O. R. R. b. m. 55)--- | 263.323 |
| Weverton, 2.5 miles west of, near Harpers Ferry, 400 feet east of Harpers Ferry tunnel, in box culvert 300 feet west of milepost 81; copper bolt (B. & O. R. R. b. m. 56)----- | 280.268 |
| From point near Doubs along Baltimore & Ohio R. R. to Washington Junction. | |
| Doub's, near, 300 feet west of milepost 66, in west capstone of south coping of arch culvert; copper bolt (B. & O. R. R. b. m. 160)----- | 290.887 |
| Washington Junction, near, opposite milepost 67, between tracks; top of vertical rail section (B. & O. R. R. b. m. 161)----- | 286.676 |
| Washington Junction, 0.8 mile east of, opposite milepost 68, between tracks; top of vertical rail section (B. & O. R. R. b. m. 162)----- | 257.545 |

| | |
|---|-------------------|
| Adamstown, near, at east end of first cut from Adamstown, on stone (granite) west of culvert; bottom of square hole (C. & G. S. of culvert; copper bolt (B. & O. R. R. b. m. 163)----- | Feet. 284. 950 |
| Doubs, 2 miles from, on Adamstown cut-off, 1,000 feet south of large arch culvert, in south end of west coping of small culvert; copper bolt (B. & O. R. R. b. m. 164)----- | 270. 636 |
| Washington Junction, 1.5 miles from, on Adamstown cut-off, at north end of first large cut from Metropolitan branch, in north end of west coping of culvert; copper bolt (B. & O. R. R. b. m. 165)----- | 252. 073 |
| Washington Junction, on south side of tracks, 150 feet east of old signal tower; top of vertical rail section (B. & O. R. R. b. m. 44)--- | 235. 885 |

BALTIMORE QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 76° 30'–76° 45']

In the vicinity of Baltimore.

| | |
|---|----------|
| West Baltimore, between tracks; top of vertical rail section (B. & O. R. R. b. m. 36)----- | 72. 352 |
| Baltimore, corner of West Ostend and Sharp streets, on Locust Point line of Baltimore & Ohio R. R., 500 feet east of railroad junction, in middle of south coping on eastern one of two small culverts; copper bolt (B. & O. R. R. b. m. 39)----- | 9. 134 |
| Baltimore, corner of Howard Street and Fifth Avenue, in step at entrance to Fifth Regiment armory; copper bolt (city b. m. 1288)--- | 127. 060 |
| Baltimore, at Mount Royal station, between third and fourth bents of train shed from Mount Royal entrance to tunnel, in coping of retaining wall; copper bolt (B. & O. R. R. b. m. 41)----- | 70. 876 |
| Mount Royal station, Baltimore, 0.5 mile north of, in end of north abutment of bridge over Pennsylvania tracks; copper bolt (B. & O. R. R. b. m. 42)----- | 93. 707 |
| Baltimore, about 400 feet west of milepost 3, in south end of west abutment of small bridge; copper bolt (B. & O. R. R. b. m. 43)---- | 149. 370 |
| Baltimore, Belt Line R. R. bridge over Jenkins Lane, in south bridge seat of east abutment; copper bolt (city b. m. 1240)----- | 142. 395 |
| Baltimore, on north side of Fort McHenry, east of quartermaster's wharf, at first angle in sea wall; cross cut on top of wall ("Tidal 1")----- | 4. 442 |
| Baltimore, on north side of Fort McHenry, on top of sea wall, in center of fourth capstone west from quartermaster's wharf; cross cut within a circle ("Tidal 2")----- | 4. 626 |
| Baltimore, at southeast corner of storehouse, south of quartermaster's wharf, highest point of knob of an old cannon set in ground with muzzle downward ("Tidal 3")----- | 0. 068 |
| Baltimore, at Fort McHenry, at intersection of roads leading to fort entrance and quartermaster's wharf, on corner diagonally opposite the colonel's office; highest point of knob of an old cannon set in ground with muzzle downward ("Tidal 4")----- | 27. 536 |
| Baltimore, at corner of Fort Avenue and Towson Street, at Fort Avenue entrance to Church of Our Lady of Good Counsel, in west end of top step; bottom of square hole (city 1181)----- | 30. 623 |
| Baltimore, on corner of Randall and Covington streets, northeast entrance to Riverside Park, in top of large granite gatepost on south side of path, close to corner of post; bottom of square hole (C. & G. S. b. m. L)----- | 69. 921 |

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|--|-----------------|
| Baltimore, at corner of Sharp and Ostend streets, on north end of west one of two small railroad culverts; in top of first coping Adamstown cut-off, not far from Doubs, in east end of north coping b. m. M)----- | Feet. 8. 993 |
| Baltimore, 300 feet from south end of Belt Line cut, at approach to Camden station, in extreme south end of eastern offset to west retaining wall for elevated tracks; copper bolt (B. & O. R. R. b. m. 40)----- | 25. 141 |
| Mount Winans, 0.3 mile northeast of, on west abutment of bridge 3A, set vertically in south capstone; copper bolt (B. & O. R. R. b. m. 38)----- | 21. 631 |
| Mount Winans, near northeast end of station platform, between tracks; top of vertical rail section (B. & O. R. R. b. m. 37)----- | 36. 765 |

From N-I tower along Pennsylvania R. R. to Arbutus.

| | |
|---|---------|
| N-I tower, 60 feet south of, in northeast coping of box culvert; copper bolt (P. R. R. b. m. 84)----- | 34. 72 |
| Milepost 91, 2,700 feet south of, in southwest coping of arch; copper bolt (P. R. R. b. m. 85)----- | 44. 40 |
| Milepost 92, 420 feet south of, Baltimore & Ohio R. R. crossing overhead bridge; on shelf (P. R. R. b. m. 86)----- | 58. 37 |
| Philadelphia Turnpike (Baltimore), in northeast coping of iron pipe; copper bolt (P. R. R. b. m. 86a)----- | 60. 40 |
| Patterson Park Avenue Bridge (Baltimore), in northwest bridge seat; copper bolt (P. R. R. b. m. 88)----- | 85. 32 |
| Broadway Bridge (Baltimore), north end pedestal; no mark (P. R. R. b. m. 88a)----- | 77. 52 |
| Union railroad tunnel (Baltimore), north end, west side; on shelf (P. R. R. b. m. 89)----- | 92. 87 |
| Union railroad tunnel (Baltimore), south end, west side; on shelf (P. R. R. b. m. 90)----- | 53. 46 |
| St. Paul Street Bridge (Baltimore), south end, east pier; copper bolt (P. R. R. b. m. 91)----- | 60. 22 |
| Baltimore station, 1,924 feet south of, north end, east side Baltimore & Potomac R. R. tunnel; on shelf (P. R. R. b. m. 92)----- | 66. 20 |
| Pennsylvania Avenue station (Baltimore), in south step; copper bolt (P. R. R. b. m. 93)----- | 133. 15 |
| Lafayette, 2,273 feet north of, southwest wing of Baltimore & Potomac R. R. tunnel (Baltimore); on shelf (P. R. R. b. m. 94)----- | 162. 31 |
| Lafayette, 1,856 feet south of, southwest back wall, Franklin Street undergrade (Baltimore); square (P. R. R. b. m. 95 A)----- | 143. 45 |
| Calverton, 1,961 feet south of, northwest back wall Gwynn's Falls Bridge; copper bolt (P. R. R. b. m. 96)----- | 140. 50 |
| Frederick Road, east side retaining wall; shelf (P. R. R. b. m. 97)--- | 157. 32 |
| Louden Park, west side of track, on cemetery wall; square (P. R. R. b. m. 98)----- | 146. 50 |
| Louden Park, 1,944 feet south of, overhead bridge, on southwest pedestal; square (P. R. R. b. m. 98a)----- | 154. 26 |

From Baltimore station north along Pennsylvania R. R. to milepost 17.

| | |
|--|---------|
| Milepost 2, 930 feet north of, in southeast bridge seat; copper bolt (P. R. R. b. m. 1)----- | 116. 58 |
| Woodberry, west center of arch; copper bolt (P. R. R. b. m. 2)----- | 138. 80 |
| Woodberry, east center of arch; copper bolt (P. R. R. b. m. 3)----- | 155. 98 |

| | |
|--|-----------------|
| Milepost 4, 360 feet south of, south side of track, on city-line stone; square (P. R. R. b. m. 4)----- | Feet. 174.73 |
| Melvale, 840 feet north of, northeast back wall; copper bolt (P. R. R. b. m. 5)----- | 182.01 |
| Cylburn, 500 feet north of, northwest abutment; shelf (P. R. R. b. m. 6)----- | 199.53 |
| Mount Washington, 60 feet south of, northwest seat of bridge No. 5; copper bolt (P. R. R. b. m. 7)----- | 198.69 |
| Milepost 7, 870 feet north of, southwest seat of bridge No. 6; copper bolt (P. R. R. b. m. 8)----- | 230.69 |
| Baltimore water supply; surface of water in lake (P. R. R. determination)----- | 228.0 |
| Lake, 600 feet south of station, west side of track, in coping of arch; copper bolt (P. R. R. b. m. 9)----- | 229.70 |
| Lake, opposite station, east side of track, in rock; copper bolt (P. R. R. b. m. 9a)----- | 250.73 |
| Ruxton, 240 feet south of, northwest abutment of overhead road bridge; shelf (P. R. R. b. m. 10)----- | 269.70 |
| Sherwood, 300 feet south of, east center of arch; copper bolt (P. R. R. b. m. 11)----- | 284.15 |
| Milepost 9, 2,000 feet north of, northwest wing of bridge No. 7; copper bolt (P. R. R. b. m. 12)----- | 291.20 |
| Lutherville, station step; copper bolt (P. R. R. b. m. 13)----- | 328.73 |
| Milepost 11, 810 feet north of, west center of coping on box culvert; copper bolt (P. R. R. b. m. 14)----- | 357.09 |
| Milepost 12, 2,000 feet north of, northeast wing of bridge No. 11; copper bolt (P. R. R. b. m. 15)----- | 365.40 |
| Texas, station step; copper bolt (P. R. R. b. m. 16)----- | 329.54 |
| Cockeysville, 120 feet south of tower V, northeast coping of box culvert; copper bolt (P. R. R. b. m. 17)----- | 278.68 |
| Milepost 16, 240 feet south of, west center of arch; copper bolt (P. R. R. b. m. 18)----- | 261.51 |
| From Baltimore along Baltimore & Ohio R. R. to milepost marked "Baltimore 11 miles." | |
| Baltimore, at telegraph pole 92-8, in north end of bridge seat of east abutment of large iron bridge; copper bolt (B. & O. R. R. b. m. 44)----- | 183.396 |
| Baltimore, Gay Street station, south side of tracks, on bridge seat of west abutment of bridge; copper bolt (B. & O. R. R. b. m. 45)--- | 150.445 |
| Baltimore, opposite telegraph pole 90-11, on bridge seat of west abutment of Duncans Lane Bridge, between tracks; copper bolt (B. & O. R. R. b. m. 46)----- | 108.518 |
| Baltimore, Bay View station, 100 feet west of telegraph pole 89-20, on north end of bridge seat of east abutment of bridge over Philadelphia road; copper bolt (B. & O. R. R. b. m. 47)----- | 72.669 |
| Herring Run, at telegraph pole 88-13, in east abutment of bridge 3b; copper bolt (B. & O. R. R. b. m. 48)----- | 30.280 |
| Rosedale, opposite milepost B 9; vertical rail section between tracks (B. & O. R. R. b. m. 49)----- | 45.662 |
| Milepost marked "Balto. 10 ml." between tracks; top of vertical rail section (B. & O. R. R. b. m. 50)----- | 58.490 |

BETTERTON QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 76°–76° 15'.]

From Belcamp along Baltimore & Ohio R. R. to point near Stepney.

| | |
|---|-----------------|
| Belcamp, 0.5 mile east of Sewell, in southeast capstone of bridge 22 A; copper bolt (B. & O. R. R. b. m. 67)----- | Feet. 22.998 |
| Belcamp, 0.2 mile east of, opposite milepost 28, between tracks; top of vertical rail section (B. & O. R. R. b. m. 68)----- | 36.444 |
| Stepney, near, at telegraph pole 67–27, in southeast capstone of bridge 23 A; copper bolt (B. & O. R. R. b. m. 68 A)----- | 34.434 |
| Stepney, near, at telegraph pole 66–22, in north end of west abutment of bridge 25 A; copper bolt (B. & O. R. R. b. m. 69)----- | 18.365 |
| Stepney, 0.8 mile west of, opposite milepost 30, between tracks; top of vertical rail section (B. & O. R. R. b. m. 70)----- | 43.968 |

From milepost 65 along Pennsylvania R. R. to Bush River.

| | |
|--|-------|
| Milepost 65, in east end of box culvert; copper bolt (P. R. R. b. m. 62)----- | 67.60 |
| Milepost 66, 810 feet south of, in northeast abutment of open bridge; copper bolt (P. R. R. b. m. 63)----- | 64.10 |
| Milepost 68, 660 feet north of, in northeast coping of box culvert; copper bolt (P. R. R. b. m. 64)----- | 43.75 |
| Perrymansville, in step of station; copper bolt (P. R. R. b. m. 65)--- | 44.12 |
| Milepost 70, 460 feet north of, in southeast coping of box culvert; copper bolt (P. R. R. b. m. 66)----- | 35.01 |
| Milepost 70, 4,200 feet south of, in northeast coping of box culvert; copper bolt (P. R. R. b. m. 67)----- | 16.89 |
| Bush River, wooden sill of tower (P. R. R. b. m. 68)----- | 11.93 |
| Bush River, south end of bridge over, in northwest coping of box culvert; copper bolt (P. R. R. b. m. 69)----- | 7.62 |

ELK GARDEN QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 79°–79° 15'.]

Near Swanton.

| | |
|--|-----------|
| Swanton, near, on abutment of small Baltimore & Ohio R. R. bridge; cut, marked "B□M" (C. & G. S. b. m. XXV)----- | 2,274.619 |
|--|-----------|

From point near Bloomington along Baltimore & Ohio R. R. to point near Altamont.

| | |
|---|-----------|
| Bloomington, 0.2 mile east of, on bridge 79 over Potomac River, second step from top, in north bridge abutment; copper bolt (B. & O. R. R. b. m. 29)----- | 1,008.800 |
| Bloomington, near, opposite milepost 209, between tracks; top of vertical rail section (B. & O. R. R. b. m. 30)----- | 1,093.561 |
| Black Bear, near, opposite milepost 210, between tracks; top of vertical rail section (B. & O. R. R. b. m. 31)----- | 1,210.024 |
| Black Bear, near, southwest side of southeast portal of Everetts tunnel; square cut in foundation (B. & O. R. R. b. m. 31 A)----- | 1,279.824 |
| Black Bear, near, at telegraph pole 210–30, in foundation at northeast side of northwest portal of Everetts tunnel, copper bolt (B. & O. R. R. b. m. 32)----- | 1,291.802 |

| | |
|---|--------------------|
| Bond station, 1.2 miles east of, 2.6 miles east of Frankville, 100 feet east of signal station, south side of Baltimore & Ohio R. R.; bronze tablet set in rock (U. S. G. S. b. m.)----- | Feet. 1,380.440 |
| Bond station, 0.5 mile east of, opposite milepost 212, between tracks; top of vertical rail section (B. & O. R. R. b. m. 33)----- | 1,445.351 |
| Crabtree, opposite milepost 213, between tracks; top of vertical rail section (B. & O. R. R. b. m. 34)----- | 1,564.118 |
| Frankville, near, 45 feet east of telegraph pole 213-39, south side of track, in rock; copper bolt (B. & O. R. R. b. m. 35)----- | 1,670.354 |
| Frankville, near, 30 feet northeast of telegraph pole 215-03, on south side of track, in rock; copper bolt (B. & O. R. R. b. m. 36)--- | 1,804.097 |
| Frankville, 1.5 miles southwest of, northwest of tracks, near milepost 216, 500 feet northeast of Hitchcock tunnel, in southwest end of retaining wall; copper bolt (B. & O. R. R. b. m. 37)----- | 1,910.921 |
| Frankville, 2.5 miles southwest of, opposite milepost 217, between tracks; top of vertical rail section (B. & O. R. R. b. m. 38)----- | 2,027.378 |
| Swanton, 1 mile northeast of, at telegraph pole 218-13½, in abutment of bridge 80, north side of track; copper bolt (B. & O. R. R. b. m. 39)----- | 2,185.475 |
| Swanton, 0.2 mile northeast of, at telegraph pole 219-5½, in northwest end of bridge seat of northeast abutment of bridge 83; copper bolt (B. & O. R. R. b. m. 40)----- | 2,271.557 |
| Swanton, 0.2 mile southwest of, at telegraph pole 219-21, on bridge 84, in bridge seat of abutment toward Wheeling; copper bolt (B. & O. R. R. b. m. 40 A)----- | 2,297.299 |
| Swanton, 1.2 miles southwest of, at telegraph pole 220-19, in bridge seat of abutment toward Wheeling; copper bolt (B. & O. R. R. b. m. 41)----- | 2,381.425 |
| Swanton, 1.8 miles southwest of, opposite milepost 221, between tracks; top of vertical rail section (B. & O. R. R. b. m. 42)----- | 2,435.851 |

ELKTON QUADRANGLE.

[Latitude 39° 30'-39° 45'; longitude 75° 45'-76°.]

From Delaware-Maryland boundary line along Pennsylvania R. R. to milepost 56.

| | |
|--|--------|
| Delaware-Maryland boundary stone; top of new stone marked "tangent 1849" (P. R. R. b. m. 36 A)----- | 117.99 |
| Iron Hill, 200 feet south of station, in northeast coping of box culvert; copper bolt (P. R. R. b. m. 37)----- | 121.81 |
| Milepost 43, 2,400 feet north of, in center of east coping of culvert; copper bolt (P. R. R. b. m. 38)----- | 88.20 |
| Milepost 43, 3,000 feet south of, in southeast coping of twin arch; copper bolt (P. R. R. b. m. 39)----- | 57.84 |
| Big Elk Creek, at southwest corner of bridge 54, in back wall; copper bolt (P. R. R. b. m. 40)----- | 33.60 |
| Elkton, in doorsill of station; copper bolt (P. R. R. b. m. 41)----- | 30.00 |
| Milepost 46, 500 feet south of, in southwest back wall of bridge 55; copper bolt (P. R. R. b. m. 42)----- | 19.50 |
| Milepost 47, 1,200 feet north of, northwest coping of culvert; copper bolt (P. R. R. b. m. 43)----- | 23.59 |
| Milepost 48, 1,560 feet north of, in northeast wing of arch bridge; copper bolt (P. R. R. b. m. 44)----- | 56.47 |

| | |
|--|----------------|
| Milepost 48, 900 feet south of, in northeast wing of 20-foot arch; copper bolt (P. R. R. b. m. 44a)----- | Feet. 71.06 |
| Bacon Hill, in northeast corner of coping of box culvert; copper bolt (P. R. R. b. m. 45)----- | 76.15 |
| Milepost 50, 1,020 feet south of, in southeast coping of arch; copper bolt (P. R. R. b. m. 46)----- | 71.78 |
| Northeast, 1,800 feet north of; copper bolt (P. R. R. b. m. 47)----- | 48.80 |
| Milepost 52, 180 feet north of, in southeast coping of arch; copper bolt (P. R. R. b. m. 48)----- | 28.58 |
| Milepost 52, 1,300 feet south of, in east pier of overhead bridge; copper bolt (P. R. R. b. m. 48a)----- | 31.61 |
| Milepost 53, 1,800 feet north of, 12-foot arch in northeast end of coping; copper bolt (P. R. R. b. m. 48b)----- | 21.57 |
| Milepost 53, 150 feet north of, northeast end of coping, Broad Creek arch; copper bolt (P. R. R. b. m. 49)----- | 24.94 |
| Milepost 53, 1,350 feet south of, box culvert in northeast end of coping; copper bolt (P. R. R. b. m. 48a)----- | 27.96 |
| Charlestown, 390 feet south of, northwest coping of box culvert; copper bolt (P. R. R. b. m. 50)----- | 41.20 |
| Milepost 55, 150 feet north of, northwest coping of box culvert; copper bolt (P. R. R. b. m. 51)----- | 57.11 |

From Foy's Hill along Baltimore & Ohio R. R. to point near Newark, Del.

| | |
|---|---------|
| Milepost 45, opposite, between tracks; vertical rail section (B. & O. R. R. b. m. 85)----- | 206.473 |
| Milepost 46, 10 feet east of, in outcropping rock; copper bolt (B. & O. R. R. b. m. 86)----- | 182.868 |
| Leslie, 0.5 mile west of, in north end of west abutment to bridge 42 A; copper bolt (B. & O. R. R. b. m. 87)----- | 164.278 |
| Milepost 48, opposite, between tracks; vertical rail section (B. & O. R. R. b. m. 88)----- | 138.779 |
| Eder, 1 mile east of Leslie, bridge 44 C over creek, in north end of bridge seat of west abutment; copper bolt (B. & O. R. R. b. m. 89)----- | 118.520 |
| Eder, 0.2 mile east of, mud wall of bridge 45 B, in north coping stone of west abutment; copper bolt (B. & O. R. R. b. m. 90)----- | 137.852 |
| Eder, 0.8 mile east of, open culvert, in north capstone of west abutment; copper bolt (B. & O. R. R. b. m. 90 A)----- | 138.536 |
| Childs, 0.5 mile west of, in north end of west abutment of bridge 47 B; copper bolt (B. & O. R. R. b. m. 91)----- | 136.394 |
| Childs, 0.2 mile east of, at Slingerly, in north capstone of west abutment of bridge 47 F; copper bolt (B. & O. R. R. b. m. 92)----- | 136.447 |
| Baldwin, at Slingerly Tower, in north capstone of west abutment of bridge 49 A; copper bolt (B. & O. R. R. b. m. 93)----- | 163.735 |
| Baldwin, 0.2 mile east of, at Barksdale, bridge 50 A over Elk Creek, in north capstone of west abutment of; copper bolt (B. & O. R. R. b. m. 94)----- | 142.576 |
| Barksdale, 0.4 mile east of, in north capstone of west abutment of bridge 51 C; copper bolt (B. & O. R. R. b. m. 95)----- | 163.166 |
| Maryland-Delaware State line, 0.1 mile west of, in north capstone of west abutment of bridge 52 A; copper bolt (B. & O. R. R. b. m. 96)----- | 135.964 |

ELLIOTT QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 76° 45'–77°.]

From Ilchester along Baltimore & Ohio R. R. to point near Needs Mill.

| | Feet. |
|--|----------|
| Ilchester, in mud wall of west abutment of bridge out of Ilchester tunnel, between tracks; copper bolt (B. & O. R. R. b. m. 104)----- | 109. 178 |
| Gray, opposite milepost 14 on old line, between tracks; top of vertical rail section (B. & O. R. R. b. m. 105)----- | 121. 486 |
| Ellcott City 600 feet west of, south side of tracks, in native rock; copper bolt (B. & O. R. R. b. m. 106)----- | 144. 376 |
| Oella, 400 feet east of, in center of north coping of arch culvert; copper bolt (B. & O. R. R. b. m. 106 A)----- | 148. 034 |
| Oella, 0.8 mile west of, on west side of tracks, 40 feet south of telegraph pole 16–10, in native rock; copper bolt (B. & O. R. R. b. m. 107)----- | 168. 438 |
| Hollofield, 1.5 miles south of, in southeast corner of west wing wall of Union dam; copper bolt (B. & O. R. R. b. m. 108)----- | 187. 532 |
| Hollofield, near, in east coping of culvert, 125 feet north of milepost 18, 6 feet from south end of coping; copper bolt (B. & O. R. R. b. m. 109)----- | 192. 624 |
| Hollofield, culvert near target at tower, in north end of east coping; copper bolt (B. & O. R. R. b. m. 110)----- | 199. 996 |
| Hollofield, 0.8 mile northwest of, on south side of tracks, at telegraph pole 19–34, in large rock; copper bolt (B. & O. R. R. b. m. 111)----- | 215. 712 |
| Alberton, 0.2 mile west of, in Baltimore County, on west abutment of bridge 17, between tracks; copper bolt (B. & O. R. R. b. m. 112)----- | 222. 352 |
| Alberton, near, at Dorseys Run, in center of southeast coping of arch culvert; copper bolt (B. & O. R. R. b. m. 113)----- | 237. 053 |
| Alberton, near, 0.4 mile west of Dorseys Run, in center of north coping of arch culvert 21; copper bolt (B. & O. R. R. b. m. 114)----- | 244. 826 |
| Davis, near, 1 mile west of Dorseys Run, in center of north coping of arch culvert 22; copper bolt (B. & O. R. R. b. m. 115)----- | 249. 406 |
| Davis, in center of west coping of arch culvert 23; copper bolt (B. & O. R. R. b. m. 116)----- | 258. 759 |
| Woodstock, 500 feet east of, in south end of small culvert; copper bolt (B. & O. R. R. b. m. 117)----- | 271. 564 |
| Woodstock, near, at milepost 26, between tracks; top of vertical rail section (B. & O. R. R. b. m. 118)----- | 288. 221 |
| Marriottsville, near, 2 miles northwest of Woodstock, in retaining wall on east side of tracks, 20 feet west of telegraph pole 26–28; copper bolt (B. & O. R. R. b. m. 119)----- | 291. 600 |
| Marriottsville, in north end of west mud wall of bridge 25; copper bolt (B. & O. R. R. b. m. 120)----- | 292. 841 |
| Henryton, near, 300 feet east of Henryton tunnel, in bridge seat of west abutment of bridge 26; between tracks; copper bolt (B. & O. R. R. b. m. 121)----- | 299. 160 |
| Gorsuch, near, 100 feet west of milepost 29, in north end of small box culvert; copper bolt (B. & O. R. R. b. m. 122)----- | 310. 944 |
| Gorsuch, in north end of west abutment of culvert 27; copper bolt (B. & O. R. R. b. m. 123)----- | 323. 688 |
| Sykesville, near, opposite milepost 31, between tracks; top of vertical rail section (B. & O. R. R. b. m. 124)----- | 351. 072 |

| | |
|---|------------------|
| Sykesville, 100 feet west of station, in center of south coping of culvert; copper bolt (B. & O. R. R. b. m. 125)----- | Feet. 375.944 |
| Gaither, near, in seat of bridge at west end of Sykesville tunnel, between tracks; copper bolt (B. & O. R. R. b. m. 126)----- | 408.779 |
| Gaither, 0.2 mile southwest of, in north end of west abutment of bridge 28; copper bolt (B. & O. R. R. b. m. 127)----- | 419.235 |

FLINTSTONE QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 78° 30'–78° 45'.]

From point near Little Orleans to point near Cumberland.

| | |
|--|---------|
| Little Orleans, 14 miles southwest of, at north end of canal tunnel, a short distance below level of towpath; square cut on stone foundation (C. & G. S. b. m. No. XIV)----- | 532.357 |
| Oldtown, 5 miles east of, on coping stone of Chesapeake & Ohio Canal Lock 67; square cut (C. & G. S. b. m. No. XV)----- | 540.393 |
| Cumberland, 9.2 miles east of, on coping stone of Lock 72 of Chesapeake & Ohio Canal; square cut (C. & G. S. b. m. No. XVI)----- | 587.676 |

From point near North Branch along Baltimore & Ohio R. R. to point near Evitts Creek.

| | |
|--|---------|
| North Branch, 0.5 mile southeast of, opposite milepost 172, between tracks; top of vertical rail section (B. & O. R. R. b. m. 147)----- | 598.307 |
| North Branch, bridge over north branch of Potomac River, in bridge seat of west abutment, between tracks; copper bolt (B. & O. R. R. b. m. 147 A)----- | 602.514 |
| North Branch, 0.5 mile northwest of, opposite milepost 173, between tracks; top of vertical rail section (B. & O. R. R. b. m. 148)----- | 625.176 |
| North Branch, 1.5 miles northwest of, opposite milepost 174, between tracks; top of vertical rail section (B. & O. R. R. b. m. 149)----- | 637.056 |
| Evitts Creek, 1 mile southeast of, opposite milepost 175, between tracks; top of vertical rail section (B. & O. R. R. b. m. 150)----- | 629.429 |

FROSTBURG QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 78° 45'–79°.]

From Cumberland southwest 12 miles.

| | |
|---|---------|
| Cumberland, at western terminus of Chesapeake & Ohio Canal, on coping stone of feed lock; cut marked "I B□M U.S.C.S. 1878" (C. & G. S. b. m. I)----- | 623.766 |
| Cumberland, 5.5 miles southwest of, on abutment of small drain on Baltimore & Ohio R. R.; cut marked "B□M" (C. & G. S. b. m. No. XVII)----- | 647.393 |
| Cumberland, 12 miles southwest of, at southwest angle of drain on Baltimore & Ohio R. R.; cut on foundation stone, marked "B□M" (C. & G. S. b. m. No. XVIII)----- | 693.992 |

From point near Evitts Creek along Baltimore & Ohio R. R. to point 2 miles south of Cooks Mills.

| | |
|--|---------|
| Evitts Creek, 0.1 mile west of, opposite milepost 176, between tracks; top of vertical rail section (B. & O. R. R. b. m. 151)----- | 638.435 |
| Cumberland, 1 mile east of, opposite milepost 177, between tracks; top of vertical rail section (B. & O. R. R. b. m. 152)----- | 648.129 |

| | |
|---|-------------------|
| Cumberland, opposite milepost 178, between tracks; top of vertical rail section (B. & O. R. R. b. m. 153)----- | Feet. 632. 601 |
| Cumberland, Queen City Hotel, in front of railing to right of stairway leading to relief department, in top of wall; copper bolt (B. & O. R. R. b. m. 153 A)----- | 639. 762 |
| Cumberland, Grafton Line, at east end of viaduct bridge, on south side of tracks; copper bolt (B. & O. R. R. b. m. 154)----- | 644. 338 |
| Cumberland, 1.5 miles west of, on south side of tracks, in foundation of overhead foot bridge; copper bolt (B. & O. R. R. b. m. 155)----- | 653. 430 |
| Cumberland, 2.5 miles west of, Pennsylvania R. R. overhead crossing at the Narrows, in south end of east pier of north span; copper bolt (B. & O. R. R. b. m. 156)----- | 656. 199 |
| Mount Savage Junction, east abutment of first bridge east of, between tracks; copper bolt (B. & O. R. R. b. m. 157)----- | 681. 468 |
| Mount Savage Junction, east abutment of bridge 1 of Connellsville Division, between tracks; copper bolt (B. & O. R. R. b. m. 158)--- | 710. 440 |
| Ellerslie, in bridge seat of east abutment of bridge 2½, between tracks; copper bolt (B. & O. R. R. b. m. 160 A)----- | 727. 971 |

From point near Cumberland along Baltimore & Ohio R. R. to point near Dawson.

| | |
|--|----------|
| Cumberland, near Green Street station, overhead bridge 180 C, in north end of extension of west abutment; copper bolt (B. & O. R. R. b. m. 1)----- | 647. 699 |
| Robert station, near, 700 feet south of milepost 181, in west end of south wall of small culvert; copper bolt (B. & O. R. R. b. m. 3)--- | 632. 911 |
| Robert station, 0.1 mile south of, at telegraph pole 182-7, on small arch culvert, in north coping; copper bolt (B. & O. R. R. b. m. 4)--- | 637. 475 |
| Cedar Cliff, near, on culvert at telegraph pole 183-11, in north coping; copper bolt (B. & O. R. R. b. m. 5)----- | 648. 532 |
| Cedar Cliff, near, at telegraph pole 184-6, stone culvert, in north end of west coping; square cut (B. & O. R. R. b. m. 6)----- | 647. 706 |
| Brady, near, at telegraph pole 184-22, north side of abutment to bridge 71; copper bolt (B. & O. R. R. b. m. 6 A)----- | 647. 277 |
| Brady, 0.1 mile southwest of, at telegraph pole 185-10, in east end of north coping of culvert; copper bolt (B. & O. R. R. b. m. 7)--- | 660. 150 |
| Brady, 1 mile southwest of, at telegraph pole 186-2, west of tracks, in native rock; copper bolt (B. & O. R. R. b. m. 7A)----- | 666. 668 |
| McKenzie station, 0.5 mile east of, at telegraph pole 186 37, on undergrade highway bridge crossing, in north abutment; copper bolt (B. & O. R. R. b. m. 8)----- | 680. 759 |
| Potomac station, on undergrade highway bridge, in north abutment; copper bolt (B. & O. R. R. b. m. 9)----- | 688. 345 |
| Pinto, near, 500 feet northeast of milepost 189, on arch culvert, in north coping; copper bolt (B. & O. R. R. b. m. 10)----- | 672. 482 |
| Lowndes, near, 150 feet southwest of milepost 190, on culvert, in north coping; copper bolt (B. & O. R. R. b. m. 11)----- | 683. 240 |
| Cresap, near, at telegraph pole 190-23, on culvert, in north abutment; copper bolt (B. & O. R. R. b. m. 12)----- | 698. 825 |
| Rawlings, 800 feet southwest of, on bridge 75, opposite telegraph pole 191-23, in bridge seat of abutment toward Wheeling; copper bolt (B. & O. R. R. b. m. 13)----- | 708. 575 |
| Rawlings, near, opposite milepost 193, between tracks; top of vertical rail section (B. & O. R. R. b. m. 14)----- | 718. 819 |

| | |
|--|------------------|
| Black Oak, near, opposite milepost 194, between tracks; top of vertical rail section (B. & O. R. R. b. m. 15)----- | Feet. 724.961 |
| Black Oak, 200 feet southwest of, opposite milepost 195, between tracks; top of vertical rail section (B. & O. R. R. b. m. 16)----- | 743.804 |
| Black Oak, 0.9 mile southwest of, at telegraph pole 195-30, Western Maryland Ry. bridge, in northwest end of northeast abutment; copper bolt (B. & O. R. R. b. m. 17)----- | 740.252 |

GUNPOWDER QUADRANGLE.

[Latitude 39° 15'-39° 30'; longitude 76° 15'-76° 30'.]

From milepost 74 along Pennsylvania R. R. to H-I tower.

| | |
|---|-------|
| Milepost 74, 1,530 feet north of, southeast coping of box culvert; copper bolt (P. R. R. b. m. 70)----- | 21.84 |
| Milepost 74, 1,450 feet south of, southeast coping of cattle yard; copper bolt (P. R. R. b. m. 71)----- | 24.34 |
| Milepost 75, 390 feet south of, east coping of box culvert; copper bolt (P. R. R. b. m. 72)----- | 20.80 |
| Milepost 76, 75 feet north of, southeast coping of box culvert; copper bolt (P. R. R. b. m. 73)----- | 30.16 |
| Magnolia, doorstep of water station; copper bolt (P. R. R. b. m. 74)----- | 26.78 |
| Milepost 78, 960 feet south of, northwest coping of box culvert; copper bolt (P. R. R. b. m. 75)----- | 11.54 |
| Harewood Park, 780 feet north of, southeast coping of box culvert; copper bolt (P. R. R. b. m. 76)----- | 8.32 |
| Milepost 81, 3,330 feet south of, northeast coping of box culvert; copper bolt (P. R. R. b. m. 77)----- | 24.60 |
| Milepost 82, 880 feet south of, northeast coping of arch; copper bolt (P. R. R. b. m. 78)----- | 15.20 |
| Milepost 83, 400 feet south of, southwest coping of box culvert; copper bolt (P. R. R. b. m. 79)----- | 30.96 |
| Middle River, station step; no mark (P. R. R. b. m. 79a)----- | 32.23 |
| Milepost 80, 1,590 feet south of, northwest coping of iron pipe; no mark (P. R. R. b. m. 80)----- | 39.04 |
| Stemmer's Run, 150 feet south of, northwest back wall of undergrade road bridge; no mark (P. R. R. b. m. 81)----- | 22.92 |
| Milepost 88, southeast coping of arch; copper bolt (P. R. R. b. m. 82)----- | 12.80 |
| Milepost 89, 1,170 feet south of, northwest coping of box culvert; copper bolt (P. R. R. b. m. 83)----- | 19.40 |

From milepost 11 along Baltimore & Ohio R. R. to Belsamp.

| | |
|--|--------|
| Milepost 11, opposite, between tracks; vertical rail section (B. & O. R. R. b. m. 51)----- | 43.793 |
| Rossville, at telegraph pole 84-30, on east abutment of bridge 6 B, in south end of bridge seat; copper bolt (B. & O. R. R. b. m. 51 A)----- | 37.322 |
| Rossville, near, at telegraph pole 83-24, in bridge seat on east abutment of bridge 8 A, between westbound track and siding; copper bolt (B. & O. R. R. b. m. 52)----- | 70.380 |
| Poplar, opposite milepost 13; vertical rail section between tracks (B. & O. R. R. b. m. 53)----- | 96.455 |
| Poplar, near, opposite milepost 14, between tracks; vertical rail section (B. & O. R. R. b. m. 54)----- | 65.759 |

| | Feet. |
|--|----------|
| Cowenton, near, in north end of east abutment of bridge 10 A, at telegraph pole 81-24; copper bolt (B. & O. R. R. b. m. 54 A)----- | 51. 615 |
| Cowenton, 500 feet west of station, in southwest capstone of bridge 11 A; copper bolt (B. & O. R. R. b. m. 55)----- | 30. 688 |
| Cowenton, near, opposite milepost 16, between tracks; vertical rail section (B. & O. R. R. b. m. 56)----- | 49. 537 |
| Loreley, opposite milepost 17, between tracks; vertical rail section (B. & O. R. R. b. m. 57)----- | 92. 300 |
| Loreley, 0.2 mile east of, in capstone at south end of west abutment of bridge 13 B; copper bolt (B. & O. R. R. b. m. 58)----- | 84. 152 |
| Big Gunpowder bridge, at east end of, in east end of south coping; copper bolt (B. & O. R. R. b. m. 58 A)----- | 63. 900 |
| Bradshaw, near milepost 19, in south end of west abutment of bridge 14 B; copper bolt (B. & O. R. R. b. m. 59)----- | 54. 688 |
| Joppa, 0.5 mile east of Bradshaw, north end of east abutment of bridge 150; copper bolt (B. & O. R. R. b. m. 60)----- | 44. 007 |
| Clayton Tower, opposite milepost 21, at Joppa, between tracks; vertical rail section (B. & O. R. R. b. m. 61)----- | 89. 301 |
| Clayton, 0.2 mile west of, opposite milepost 22, between tracks; top of vertical rail section (B. & O. R. R. b. m. 62)----- | 102. 201 |
| Milepost 23, opposite, between tracks; top of vertical rail section (B. & O. R. R. b. m. 63)----- | 60. 573 |
| Van Bibber, 0.5 mile west of, in east end of south coping of east abutment of bridge 19 A; copper bolt (B. & O. R. R. b. m. 63 A)----- | 40. 418 |
| Milepost 24, east of Van Bibber, between tracks; top of vertical rail section (B. & O. R. R. b. m. 64)----- | 26. 596 |
| Bush River, opposite milepost 25, between tracks; top of vertical rail section (B. & O. R. R. b. m. 65)----- | 40. 222 |
| Sewell, 0.5 mile west of station, opposite milepost 26, between tracks; top of vertical rail section (B. & O. R. R. b. m. 66)----- | 62. 727 |

HAGERSTOWN QUADRANGLE.

[Latitude 39° 30'-39° 45'; longitude 77° 30'-77° 45'.]

At Hagerstown.

| | |
|---|----------|
| Hagerstown, at corner of Washington and Jonathan streets, on Jonathan Street side of courthouse; cut on water table (C. & G. S. b. m. A)----- | 552. 033 |
|---|----------|

HANCOCK QUADRANGLE.

[Latitude 39° 30'-39° 45'; longitude 78°-78° 15'.]

From Cherry Run to point near Hancock.

| | |
|--|----------|
| Cherry Run, nearly opposite station of Baltimore & Ohio R. R., on coping stone at upper end of "overflow" at "Big Pool," Chesapeake & Ohio Canal; square cut (C. & G. S. b. m. VII)----- | 405. 474 |
| Hancock, 8 miles east of Chesapeake & Ohio Canal aqueduct over Licking Creek, cut on coping stone, lettered "E.B.□M., U.S.C.S., 1878" (C. & G. S. b. m. E)----- | 404. 623 |
| Hancock, 1 mile east of, on coping stone at southeast end of Lock 52, Chesapeake & Ohio Canal; square cut (C. & G. S. b. m. VIII)----- | 418. 224 |
| Hancock, on middle of north side of Chesapeake & Ohio Canal aqueduct, on coping stone; cut lettered "F.B.□M., U.S.C.S., 1878" (C. & G. S. b. m. F)----- | 420. 714 |

HAVRE DE GRACE QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 76°–76° 15'.]

From milepost 56 along Pennsylvania R. R. to milepost 64.

| | |
|--|----------------|
| Milepost 56, 2,070 feet north of, in southeast coping of box culvert; copper bolt (P. R. R. b. m. 52)----- | Feet. 74.97 |
| Principio, doorsill of station; copper bolt (P. R. R. b. m. 53)----- | 67.43 |
| Milepost 57, 1,800 feet south of, in stone monument north of cattle guard; copper bolt (P. R. R. b. m. 54)----- | 62.54 |
| Milepost 59, 2,070 feet south of, on northwest wing wall of overhead road crossing; copper bolt (P. R. R. b. m. 55)----- | 36.40 |
| Perryville, northwest back wall of Susquehanna River bridge; copper bolt (P. R. R. b. m. 56)----- | 27.38 |
| Havre de Grace, southwest back wall of Susquehanna River bridge; copper bolt (P. R. R. b. m. 57)----- | 28.92 |
| Milepost 61, 90 feet north of, southeast back wall; copper bolt (P. R. R. b. m. 58)----- | 24.34 |
| Milepost 62, 240 feet south of, in southeast wall of cattle guard; copper bolt (P. R. R. b. m. 59)----- | 44.82 |
| Oakington, 1,060 feet north of, in southwest parapet of arch; copper bolt (P. R. R. b. m. 60)----- | 49.98 |
| Milepost 64, 180 feet north of, northeast coping of Swan Creek arch; copper bolt (P. R. R. b. m. 61)----- | 53.13 |

From Perryville along Pennsylvania R. R. to point near Haines.

| | |
|---|-------|
| Frenchtown, at south end of Baltimore & Ohio R. R. pier, east of track; shelf (P. R. R. b. m. 1)----- | 26.12 |
| Milepost 3, 550 feet east of, 20 feet north of track, in rock; copper bolt (P. R. R. b. m. 2)----- | 20.93 |
| Milepost 4, 1,980 feet east of, in northeast seat of bridge 27; copper bolt (P. R. R. b. m. 3)----- | 5.63 |
| Milepost 5, 570 feet east of, in southeast parapet of open box culvert; copper bolt (P. R. R. b. m. 4)----- | 8.47 |
| Milepost 6, 870 feet west of, in southwest back wall of open box culvert; copper bolt (P. R. R. b. m. 5)----- | 21.27 |
| Milepost 7, 330 feet east of, in southeast back wall of open box culvert; copper bolt (P. R. R. b. m. 6)----- | 29.07 |
| Milepost 8, 720 feet east of, in southwest back wall of open box culvert; copper bolt (P. R. R. b. m. 7)----- | 31.83 |
| Milepost 9, 270 feet west of, in southwest seat of first bridge west of Octoraro; copper bolt (P. R. R. b. m. 8)----- | 35.63 |
| Milepost 10, 360 feet east of, southeast coping of box culvert; copper bolt (P. R. R. b. m. 9)----- | 44.64 |
| Milepost 11, 210 feet west of, on rock north of track; shelf (P. R. R. b. m. 10)----- | 58.80 |
| Conowingo, southwest seat of county bridge; copper bolt (P. R. R. b. m. 11)----- | 69.11 |
| Milepost 13, 1,470 feet east of, on rock south of track; shelf (P. R. R. b. m. 12)----- | 77.18 |
| Milepost 13, 2,160 feet west of, on rock north of track; shelf (P. R. R. b. m. 13)----- | 76.70 |
| Milepost 15, 2,310 feet east of, in southwest parapet of arch; copper bolt (P. R. R. b. m. 14)----- | 80.48 |

From point near Stepaney along Baltimore & Ohio R. R. to point near Foy's Hill.

| | Feet. |
|---|---------|
| Milepost 31, vertical rail section (B. & O. R. R. b. m. 71)----- | 64.820 |
| Aberdeen, south end of west abutment of bridge 27 A, at telegraph pole 64-13; copper bolt (B. & O. R. R. b. m. 72)----- | 71.510 |
| Aberdeen, 0.2 mile east of, in north end of east abutment of bridge 28 A; copper bolt (B. & O. R. R. b. m. 73)----- | 82.547 |
| Milepost 34, opposite, between tracks; vertical rail section (B. & O. R. R. b. m. 74)----- | 65.857 |
| Osborne, west of station, in south end of west abutment of bridge 30 B; copper bolt (B. & O. R. R. b. m. 75)----- | 71.387 |
| Milepost 36, opposite, between tracks; vertical rail section (B. & O. R. R. b. m. 76)----- | 75.910 |
| Havre de Grace, 0.2 mile west of, opposite milepost 37, between tracks; vertical rail section (B. & O. R. R. b. m. 77)----- | 108.025 |
| Susquehanna River bridge, in south end of west abutment; copper bolt (B. & O. R. R. b. m. 78)----- | 94.647 |
| Aiken, in south end of bridge seat on east abutment of Susquehanna River bridge; copper bolt (B. & O. R. R. b. m. 79)----- | 91.018 |
| Aiken, 0.5 mile east of, at milepost 40, between tracks; vertical rail section (B. & O. R. R. b. m. 80)----- | 115.780 |
| Aiken, 1 mile east of, in north capstone of west abutment of bridge 36 A; copper bolt (B. & O. R. R. b. m. 80 A)----- | 129.046 |
| Jackson, 0.4 mile west of, at milepost 41, between tracks; vertical rail section (B. & O. R. R. b. m. 81)----- | 147.723 |
| Belvedere, 0.5 mile east of Jackson, in north end of west abutment of bridge 37; copper bolt (B. & O. R. R. b. m. 82)----- | 149.351 |
| Milepost 43, opposite, between tracks; vertical rail section (B. & O. R. R. b. m. 83)----- | 179.849 |
| Foy's Hill, opposite milepost 44, between tracks; vertical rail section (B. & O. R. R. b. m. 84)----- | 217.872 |

IJAMSVILLE QUADRANGLE.

[Latitude 39° 15'-39° 30'; longitude 77° 15'-77° 30'.]

From point near Monrovia along Baltimore & Ohio R. R. to point near Doubs.

| | |
|---|---------|
| Monrovia, near, opposite milepost 49, between tracks; top of vertical rail section (B. & O. R. R. b. m. 142)----- | 473.502 |
| Monrovia, 300 feet west of, in east bridge seat, between tracks; copper bolt (B. & O. R. R. b. m. 143)----- | 427.254 |
| Monrovia, near, in north end of east seat of bridge, 40 feet east of milepost 51; copper bolt (B. & O. R. R. b. m. 144)----- | 391.024 |
| Monrovia, near, in center of north coping of arch culvert, telegraph pole 51-23; copper bolt (B. & O. R. R. b. m. 145)----- | 377.146 |
| Ijamsville, near, north end of small culvert, 20 feet east of telegraph pole 52-19; copper bolt (B. & O. R. R. b. m. 146)----- | 360.117 |
| Ijamsville, near, opposite milepost 53, between tracks; top of vertical rail section (B. & O. R. R. b. m. 147)----- | 351.925 |
| Ijamsville, 0.8 mile west of, between tracks, east seat of bridge near milepost 54; copper bolt (B. & O. R. R. b. m. 148)----- | 329.561 |
| Ijamsville, near, between tracks, in west seat of new bridge at west end of Ijamsville tunnel; copper bolt (B. & O. R. R. b. m. 149)----- | 315.046 |
| Reels Mill, 1 mile east of, in west seat of bridge, between tracks; copper bolt (B. & O. R. R. b. m. 150)----- | 291.806 |

| | |
|--|-------------------|
| Reels Mill, in foundation stone, southwest corner of coal chute; copper bolt (B. & O. R. R. b. m. 151)----- | Feet. 274. 062 |
| Frederick Junction, Monocacy River bridge, in north end of mud wall of east abutment; copper bolt (B. & O. R. R. b. m. 152)----- | 206. 147 |
| Frederick Junction, 1 mile from, in south end of west coping of cul- vert; copper bolt (B. & O. R. R. b. m. 152 A)----- | 284. 950 |
| Frederick, 1.8 miles from, in outcropping limestone, east side of track, 7 telegraph poles south of milepost marked "Frederick 2," at north end of cut; copper bolt (B. & O. R. R. b. m. 152 B)----- | 302. 577 |
| Frederick, 300 feet south of station, in native rock west of tracks; copper bolt (B. & O. R. R. b. m. 152 C)----- | 289. 294 |
| Frederick Junction, 1 mile west of, 50 feet east of telegraph pole 58-34, in west end of south coping of culvert; copper bolt (B. & O. R. R. b. m. 153)----- | 252. 234 |
| Frederick Junction, 1.5 miles west of, in west end of north coping of culvert 36; copper bolt (B. & O. R. R. b. m. 153 A)----- | 251. 244 |
| Lime Kiln, near, opposite milepost 60, between tracks; top of vertical rail section (B. & O. R. R. b. m. 154)----- | 271. 897 |
| Lime Kiln, 0.5 mile west of, opposite milepost 61, between tracks; top of vertical rail section (B. & O. R. R. b. m. 155)----- | 288. 637 |
| Buckeystown station, 0.3 mile east of, opposite milepost 62, between tracks; top of vertical rail section (B. & O. R. R. b. m. 156)----- | 277. 526 |
| Buckeystown station, in west end of north coping of culvert; copper bolt (B. & O. R. R. b. m. 156 A)----- | 282. 160 |
| Buckeystown, near, opposite milepost 63, between tracks; top of ver- tical rail section (B. & O. R. R. b. m. 157)----- | 299. 146 |
| Adamstown, 0.2 mile east of, opposite milepost 64, between tracks; top of vertical rail section (B. & O. R. R. b. m. 158)----- | 310. 328 |
| Doubs, 500 feet east of, in center of north coping of culvert 36½, 275 feet west of milepost 65; copper bolt (B. & O. R. R. b. m. 159)----- | 285. 522 |
| From point near Tuscarora along Baltimore & Ohio R. R. to point near Wash- ington Junction. | |

| | |
|--|----------|
| Tuscarora, 0.3 mile east of, in south end of east wall of box culvert, 150 feet west of milepost marked "Washington 39 miles"; copper bolt (B. & O. R. R. b. m. 40 A)----- | 226. 092 |
| Tuscarora, 0.7 mile west of, on south side of tracks, near milepost 40, on top of vertical rail section; cross (B. & O. R. R. b. m. 41)--- | 226. 746 |
| Tuscarora, 1.7 miles west of, south side of tracks, near milepost 41; top of vertical rail section (B. & O. R. R. b. m. 42)----- | 226. 827 |

KEYSER QUADRANGLE.

[Latitude 39° 15'-39° 30'; longitude 78° 45'-79°.]

In the vicinity of Dawson.

| | |
|--|----------|
| Dawson, 0.5 mile northeast of, at telegraph pole 196-24½, south side of track, in rock; copper bolt (B. & O. R. R. b. m. 18)----- | 756. 077 |
| Dawson, near, west of tracks, 30 feet north of telegraph pole 197-30, in native rock; copper bolt (B. & O. R. R. b. m. 19)----- | 772. 837 |
| Dawson, near, on arch 76, telegraph pole 198-11½, in north coping; copper bolt (B. & O. R. R. b. m. 20)----- | 776. 177 |
| Dawson, near, on northwest abutment of bridge 77, opposite telegraph pole 199-17, near twenty-first bridge station, in bridge seat between tracks; copper bolt (B. & O. R. R. b. m. 21)----- | 790. 231 |

LAUREL QUADRANGLE.

[Latitude 39°-39° 15'; longitude 76° 45'-77°.]

At Bowie.

| | |
|---|------------------|
| Bowie, at Baltimore & Potomac R. R. station, on sill of danger signal (C. & G. S. b. m. VII)----- | Feet. 148.595 |
| From point near Branchville along Baltimore & Ohio R. R. to point near Dorsey. | |
| Branchville, 0.2 mile north of, at telegraph pole 29-24, in south end of east coping of box culvert; copper bolt (B. & O. R. R. b. m. 10)----- | 65.680 |
| Branchville, 0.8 mile northeast of, opposite milepost 29, between tracks; top of vertical rail section (B. & O. R. R. b. m. 11)----- | 77.546 |
| Sunnyside, 0.5 mile north of, telegraph pole 27-24, in middle of east coping of culvert; copper bolt (B. & O. R. R. b. m. 12)----- | 101.331 |
| Beltsville, 0.6 mile north of, at telegraph pole 28-20, in west end of bridge seat, on north abutment of bridge; copper bolt (B. & O. R. R. b. m. 13)----- | 125.437 |
| Ammendale, near, opposite milepost 26, between tracks; top of vertical rail section (B. & O. R. R. b. m. 14)----- | 137.830 |
| Muirkirk, near, opposite telegraph pole 25-7, in middle of south coping of culvert; copper bolt (B. & O. R. R. b. m. 14 A)----- | 152.634 |
| Muirkirk, 0.1 mile southwest of, overhead bridge at Muirkirk furnace, in southwest end of foundation of southeast abutment; copper bolt (B. & O. R. R. b. m. 15)----- | 157.667 |
| Contee, 0.4 mile southwest of, opposite milepost 24, between tracks; top of vertical rail section (B. & O. R. R. b. m. 16)----- | 179.271 |
| Contee, 0.3 mile northeast of, at telegraph pole 23-11, in northwest end of bridge seat, on northeast abutment of bridge; copper bolt (B. & O. R. R. b. m. 17)----- | 175.921 |
| Oak Crest, 0.2 mile northeast of, at telegraph pole 22-24, in center of southeast coping of culvert; copper bolt (B. & O. R. R. b. m. 17 A)----- | 160.683 |
| Laurel, 0.5 mile southwest of, at telegraph pole 21-30, in southeast end of northeast abutment of bridge 7; copper bolt (B. & O. R. R. b. m. 18)----- | 155.117 |
| Laurel, near, in Anne Arundel County, on northeast abutment of bridge 6, in southeast end of bridge seat; copper bolt (B. & O. R. R. b. m. 19)----- | 149.215 |
| Savage station, near, about on Anne Arundel-Howard county line, opposite milepost 20, between tracks; top of vertical rail section (B. & O. R. R. b. m. 20)----- | 172.896 |
| Savage station, 0.1 mile east of, in south end of east abutment of bridge 5, telegraph pole 19-8; copper bolt (B. & O. R. R. b. m. 21)----- | 154.302 |
| Annapolis Junction, 0.5 mile northeast of, northwest abutment of overhead bridge, in northeast end of foundation; copper bolt (B. & O. R. R. b. m. 22)----- | 174.540 |
| Bridewell, 0.5 mile south of, opposite milepost 17, between tracks; top of vertical rail section (B. & O. R. R. b. m. 23)----- | 170.354 |
| Bridewell, 0.1 mile east of, arch in front of State building, in west end of north coping; copper bolt (B. & O. R. R. b. m. 24)----- | 168.671 |

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| Jennapa, near, opposite milepost 15, between tracks; top of vertical rail section (B. & O. R. R. b. m. 25)----- | Feet. 158.318 |
| Monterideo, near, opposite milepost 14, between tracks; top of vertical rail section (B. & O. R. R. b. m. 26)----- | 137.135 |

From Arundel along Pennsylvania R. R. to Bowie.

| | |
|--|--------|
| Arundel, 550 feet north of, south seat of bridge 12; copper bolt (P. R. R. b. m. 117)----- | 75.15 |
| Arundel, 533 ³ / ₄ feet south of, southeast box culvert; copper bolt (P. R. R. b. m. 118)----- | 124.23 |
| Bowie, 2910 feet north of, east side of track; stone marker (P. R. R. b. m. 119)----- | 165.67 |
| Bowie, at tower, east side of track; stone marker (P. R. R. b. m. 120)--- | 148.00 |

MOUNT AIRY QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 77°–77° 15'.]

From point near Hoods Mill along Baltimore & Ohio R. R. to point near Monrovia.

| | |
|---|---------|
| Hoods Mill, near, 100 feet west of milepost 34, in south end of small culvert; copper bolt (B. & O. R. R. b. m. 128)----- | 428.006 |
| Hoods Mill, at dam, on south side of tracks, in large rock; copper bolt (B. & O. R. R. b. m. 129)----- | 441.836 |
| Morgan, near, opposite milepost 36, between tracks; top of vertical rail section (B. & O. R. R. b. m. 130)----- | 400.741 |
| Woodbine, near, opposite milepost 37, between tracks; top of vertical rail section (B. & O. R. R. b. m. 131)----- | 485.970 |
| Woodbine, 300 feet west of, in northeast corner of small culvert; copper bolt (B. & O. R. R. b. m. 131 A)----- | 495.871 |
| Woodbine, near, opposite milepost 38, between tracks; top of vertical rail section (B. & O. R. R. b. m. 132)----- | 513.733 |
| Watersville, near, in bridge seat of east abutment of bridge, at east end of Mount Airy cut-off, between tracks; copper bolt (B. & O. R. R. b. m. 133)----- | 550.513 |
| Watersville, 0.2 miles west of, on Mount Airy cut-off, in north coping of culvert; copper bolt (B. & O. R. R. b. m. 134)----- | 593.519 |
| Watersville, 1 mile west of, at east end of cut on Mount Airy cut-off, in west end of south coping of culvert; copper bolt (B. & O. R. R. b. m. 135)----- | 622.060 |
| Watersville, at east end of Mount Airy tunnel, between tracks; top of vertical rail section (B. & O. R. R. b. m. 136)----- | 703.202 |
| Watersville, near, in Frederick County, at west end of Mount Airy tunnel, between tracks; top of vertical rail section (B. & O. R. R. b. m. 136 A)----- | 679.926 |
| Plane No. 4, near, 0.2 mile east of Mount Airy Junction, 0.5 mile west of Mount Airy tunnel, in east end of south coping of culvert; copper bolt (B. & O. R. R. b. m. 137)----- | 657.334 |
| Plane No. 4, 250 feet east of, in east end of north coping of arch; copper bolt (B. & O. R. R. b. m. 138)----- | 581.314 |
| Bartholows, 0.3 mile east of, on south side of tracks, 500 feet west of milepost 47, in east end of small culvert; copper bolt (B. & O. R. R. b. m. 139)----- | 550.150 |

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| Bartholows, 300 feet west of, in west end of north coping of arch road crossing; copper bolt (B. & O. R. R. b. m. 140)----- | Feet. 528.403 |
| Monrovia, near, in north end of small culvert, 400 feet west of crossing of old and new tracks; copper bolt (B. & O. R. R. b. m. 141)--- | 489.494 |

OAKLAND QUADRANGLE.

[Latitude 39° 15'–39° 30'; longitude 79° 15'–79° 30'.]

From point near Deer Park west to Huttons Switch.

| | |
|---|-----------|
| Deer Park, a short distance north of, on top stone of cattle guard; cut marked "B.□M." (C. & G. S. b. m. XXIII)----- | 2,455.959 |
| Oakland Park, 3 miles east of, on west abutment of small bridge (Baltimore & Ohio R. R.); cut marked "B.□M." (C. & G. S. b. m. XXII)----- | 2,404.324 |
| Oakland, 1.2 miles west of, southwest corner of Baltimore & Ohio R. R. bridge over Youghiogheny River; cut on abutment lettered "K. B.□M., U. S. C. S., 1878" (C. & G. S. b. m. K)----- | 2,375.518 |
| Huttons Switch station, Baltimore & Ohio bridge over small run; square cut on abutment (C. & G. S. b. m. XXIV)----- | 2,434.343 |

From point near Altamont west along Baltimore & Ohio R. R. to point near Hutton.

| | |
|---|-----------|
| Altamont, 1.2 miles northeast of, opposite milepost 222, between tracks; top of vertical rail section (B. & O. R. R. b. m. 43)----- | 2,541.970 |
| Altamont, 0.2 mile east of, opposite milepost 223, about at summit, between tracks; top of vertical rail sections (B. & O. R. R. b. m. 44)--- | 2,627.936 |
| Altamont, 0.8 mile west of, opposite milepost 224, between tracks; top of vertical rail section (B. & O. R. R. b. m. 45)----- | 2,578.503 |
| Deer Park, 1 mile east of, opposite milepost 225, between tracks; top of vertical rail section (B. & O. R. R. b. m. 46)----- | 2,526.474 |
| Deer Park, 200 feet east of station, opposite milepost 226, between tracks; top of vertical rail section (B. & O. R. R. b. m. 47)----- | 2,473.496 |
| Deer Park, 500 feet northeast of station for Deer Park Hotel, at telegraph pole 226-14½; in southwest corner of culvert; copper bolt (B. & O. R. R. b. m. 47 A)----- | 2,449.090 |
| Deer Park, near, 0.6 mile southwest of station for Deer Park Hotel, opposite milepost 227, between tracks; top of vertical rail section (B. & O. R. R. b. m. 48)----- | 2,436.802 |
| Mountain Lake Park, 1.2 miles east of, opposite milepost 228, between tracks; top of vertical rail section (B. & O. R. R. b. m. 49)--- | 2,422.405 |
| Mountain Lake Park, 0.2 mile east of, at telegraph pole 229-6½, on west abutment of bridge 86, in west end of north wing; copper bolt (B. & O. R. R. b. m. 50)----- | 2,404.683 |
| Mountain Lake Park, 0.3 mile west of, at telegraph pole 229-29, in north abutment of bridge; copper bolt (B. & O. R. R. b. m. 51)--- | 2,396.994 |
| Oakland, 1 mile south of, opposite milepost 231, between tracks; top of vertical rail section (B. & O. R. R. b. m. 52)----- | 2,383.138 |
| Oakland, 300 feet southeast of station, on bridge, in abutment toward Wheeling, 7 feet below grade; copper bolt (B. & O. R. R. b. m. 53)--- | 2,370.924 |
| Oakland, 0.5 mile northwest of, opposite telegraph pole 232-22, on northeast abutment of highway bridge, in northeast end of south-east wing; copper bolt (B. & O. R. R. b. m. 53 A)----- | 2,377.119 |

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|--|--------------------|
| Oakland, 1.5 miles northwest of, on bridge 88 over Youghiogheny River, in bridge seat of abutment toward Wheeling; copper bolt (B. & O. R. R. b. m. 54)----- | Feet. 2,377.707 |
| Oakland, 2 miles northwest of, opposite milepost 234, between tracks; top of vertical rail section (B. & O. R. R. b. m. 55)----- | 2,402.333 |
| Oakland, 3 miles west of, opposite milepost 235, between tracks; top of vertical rail section (B. & O. R. R. b. m. 56)----- | 2,442.714 |
| Skipulsh, near, opposite milepost 236, between tracks; top of vertical rail section (B. & O. R. R. b. m. 57)----- | 2,454.449 |
| Hutton, 0.5 mile southeast of, opposite milepost 237, between tracks; top of vertical rail section (B. & O. R. R. b. m. 58)----- | 2,482.274 |
| Hutton, 0.5 mile northwest of, opposite milepost 238, between tracks; top of vertical rail section (B. & O. R. R. b. m. 59)----- | 2,445.563 |

PARKTON QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 76° 30'–76° 45'.]

From milepost 17 along Pennsylvania R. R. to milepost 37.

| | |
|---|--------|
| Milepost 17, 900 feet south of, northeast wing of bridge 18; copper bolt (P. R. R. b. m. 19)----- | 254.59 |
| Phoenix, northwest wing of bridge 20; copper bolt (P. R. R. b. m. 20)----- | 244.15 |
| Milepost 19, 1,800 feet south of, southeast coping of bridge 23; copper bolt (P. R. R. b. m. 21)----- | 254.85 |
| Sparks, west center of arch; copper bolt (P. R. R. b. m. 22)----- | 253.93 |
| Milepost 20, 1,230 feet north of, east center of arch; copper bolt (P. R. R. b. m. 23)----- | 256.62 |
| Milepost 21, 3,420 feet north of, southwest back wall of bridge 27; copper bolt (P. R. R. b. m. 24)----- | 290.03 |
| Corbett, 1,650 feet north of, southeast back wall of bridge 28; copper bolt (P. R. R. b. m. 25)----- | 309.58 |
| Milepost 23, 2,400 feet north of, east center of box culvert; copper bolt (P. R. R. b. m. 26)----- | 317.52 |
| Blue Mount, 700 feet south of, southeast seat of bridge 30; copper bolt (P. R. R. b. m. 27)----- | 313.28 |
| Milepost 26, 900 feet south of, southwest wing of bridge 35; copper bolt (P. R. R. b. m. 28)----- | 332.18 |
| Milepost 27, 270 feet south of, southeast back wall; copper bolt (P. R. R. b. m. 29)----- | 353.77 |
| Milepost 28, 300 feet north of, 60 feet east of track, in rock; copper bolt (P. R. R. b. m. 30)----- | 393.70 |
| Parkton, 300 feet south of station, 175 feet east of track, in rock; copper bolt (P. R. R. b. m. 31)----- | 419.49 |
| Bentley, 1,300 feet south of, northwest wing of bridge 53; copper bolt (P. R. R. b. m. 33)----- | 501.82 |
| Milepost 32, 2,370 feet north of, northwest wing of bridge 57; copper bolt (P. R. R. b. m. 34)----- | 552.58 |
| Milepost 34, 960 feet south of, southwest seat of bridge 60; copper bolt (P. R. R. b. m. 35)----- | 647.60 |
| Milepost 35, 600 feet south of, east center of arch bridge 62; copper bolt (P. R. R. b. m. 36)----- | 726.30 |
| Milepost 35, 2,760 feet north of, northwest arch of bridge 65; copper bolt (P. R. R. b. m. 37)----- | 779.99 |

PAWPAW QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 78° 15'–78° 30'.]

From point near Hancock to point near Little Orleans.

| | Feet. |
|--|----------|
| Hancock, 6 miles west of, on coping stone of Lock 53, Chesapeake & Ohio Canal; square cut (C. & G. S. b. m. IX)----- | 427. 073 |
| Hancock, 10 miles west of, cut on coping stone of Chesapeake & Ohio Canal Lock 55, at Dam 6; lettered "G.B.□M., U.S.C.S., 1878" (C. & G. S. b. m. G)----- | 443. 810 |
| Hancock, 12.2 miles west of, on coping stone at north end of Chesapeake & Ohio Canal Lock 56; square cut (C. & G. S. b. m. X)----- | 451. 616 |
| Little Orleans, 4.8 miles east of, at south side and east end of Chesapeake & Ohio Canal Lock 57, on top of wing wall; square cut (C. & G. S. b. m. XI)----- | 458. 134 |
| Little Orleans aqueduct of Chesapeake & Ohio Canal over Fifteen-mile Creek, on coping stone; square cut (C. & G. S. b. m. XII)----- | 459. 685 |
| Little Orleans, 3 miles west of, on coping of Chesapeake & Ohio Canal Lock 58; square cut (C. & G. S. b. m. XIII)----- | 467. 601 |
| Little Orleans, 12 miles southwest of, 2 miles east of canal tunnel, on coping of Lock 61; cut lettered "H.B.□M., U.S.C.S., 1878" (C. & G. S. b. m. II)----- | 492. 308 |

RELAY QUADRANGLE.

[Latitude 39°–39° 15'; longitude 76° 30'–76° 45'.]

From point near Dorsey along Baltimore & Ohio R. R. to West Baltimore.

| | |
|--|----------|
| Dorsey, 0.2 mile east of, 400 feet southwest of milepost 13, in southwest end of northwest coping of culvert; copper bolt (B. & O. R. R. b. m. 27)----- | 176. 778 |
| Harwood, 0.3 mile east of, about 450 feet east of milepost 12, in middle of south coping of arch culvert; copper bolt (B. & O. R. R. b. m. 28)----- | 83. 215 |
| Hanover, 0.5 mile east of, opposite milepost 11, between tracks; top of vertical rail section (B. & O. R. R. b. m. 29)----- | 80. 853 |
| Elk Ridge, 0.2 mile southeast of, east side of tracks, 30 feet south of milepost 10, in coping of retaining wall; copper bolt (B. & O. R. R. b. m. 30)----- | 71. 105 |
| Relay, at east end of viaduct bridge on south side of tracks, in center of top of stone post; copper bolt (B. & O. R. R. b. m. 31)----- | 71. 715 |
| St. Denis, 0.1 mile east of, in middle of south coping of arch culvert; copper bolt (B. & O. R. R. b. m. 31 A)----- | 67. 691 |
| St. Denis, 0.8 mile east of, at east end of north abutment of overhead public-road bridge, in foundation on first course of stone; copper bolt (B. & O. R. R. b. m. 32)----- | 73. 896 |
| Halethorpe, 0.1 mile east of, near telegraph pole 5–20, in south end of west wall of culvert; copper bolt (B. & O. R. R. b. m. 33)----- | 67. 800 |
| Winans, 780 feet south of, in east end of Baltimore & Ohio R. R. bridge; shelf cut (P. R. R. b. m. 101)----- | 36. 767 |
| Lansdowne, opposite milepost 4, on top of vertical rail section; cross (B. & O. R. R. b. m. 34)----- | 68. 931 |
| Lansdowne, 0.5 mile north of, south end of west abutment of overhead bridge, in large coping stone of retaining wall; copper bolt (B. & O. R. R. b. m. 35)----- | 79. 112 |

From Relay along Baltimore & Ohio R. R. to Heister.

| | |
|---|-----------------|
| Relay, 0.5 mile east of, in northwest corner of culvert; copper bolt (B. & O. R. R. b. m. 100)..... | Feet. 66.632 |
| Vineyard, in east end of south coping of bridge 10; copper bolt (B. & O. R. R. b. m. 101)..... | 70.972 |
| Vineyard, near, in east end of west offset of south coping of bridge; copper bolt (B. & O. R. R. b. m. 102)..... | 77.056 |
| Orange Grove, 0.2 mile northwest of, on north side of tracks, 250 feet northwest of milepost 12, near large white-poplar tree, in native rock; copper bolt (B. & O. R. R. b. m. 103)..... | 94.988 |

From Arbutus along Pennsylvania R. R. to point near Arundel.

| | |
|---|--------|
| Arbutus, 2,050 feet north of, west side of track; stone marker (P. R. R. b. m. 99)..... | 114.41 |
| Halethorpe, 429 feet north of, west coping of box culvert; copper bolt (P. R. R. b. m. 100)..... | 58.82 |
| Winans, 750 feet south of, on east Baltimore & Ohio R. R. bridge; shelf (P. R. R. b. m. 101)..... | 36.767 |
| Patapsco, 2,407 feet north of, southeast coping; copper bolt (P. R. R. b. m. 102)..... | 30.19 |
| Patapsco, southeast back wall of undergrade bridge; square (P. R. R. b. m. 103a)..... | 33.96 |
| Patapsco, 5,066 feet south of, in west coping of box culvert; copper bolt (P. R. R. b. m. 104)..... | 44.88 |
| Stony Run, 1,390 feet south of, in west coping of box culvert; copper bolt (P. R. R. b. m. 105)..... | 68.79 |
| Harman, 4,210 feet north of, in east center coping of arch; copper bolt (P. R. R. b. m. 106)..... | 84.24 |
| Harman, east side of track; stone marker (P. R. R. b. m. 107)..... | 126.66 |
| Severn, east side of track; stone marker (P. R. R. b. m. 108)..... | 167.00 |
| Severn, 3,640 feet south of, in northeast coping of box culvert; copper bolt (P. R. R. b. m. 109)..... | 136.62 |
| Severn, 5,650 feet south of, on bridge 9, in southwest coping of arch; copper bolt (P. R. R. b. m. 110)..... | 118.72 |
| Odenton, 2,250 feet north of, in southeast coping of box culvert; copper bolt (P. R. R. b. m. 111)..... | 137.12 |
| Odenton, 150 feet north of, in southwest end parapet of box culvert; copper bolt (P. R. R. b. m. 112)..... | 148.93 |
| Odenton, 3,500 feet south of, on east side of track; stone marker (P. R. R. b. m. 113)..... | 166.61 |
| Patuxent, 4,070 feet north of, in northeast bridge seat of bridge 10; copper bolt (P. R. R. b. m. 114)..... | 106.06 |
| Patuxent, 1,700 feet north of, in southwest bridge seat of bridge 11; copper bolt (P. R. R. b. m. 115)..... | 82.51 |
| Patuxent, 3,540 feet south of, on east side of track, at Patuxent tower; stone marker (P. R. R. b. m. 116)..... | 121.42 |

ROCKVILLE QUADRANGLE.

[Latitude 39°-39° 15'; longitude 77°-77° 15'.]

From point near Linden along Baltimore & Ohio R. R. to Waring.

| | |
|---|---------|
| Linden, 0.3 mile east of, opposite milepost marked "Washington 9 miles," between tracks; top of vertical rail section (B. & O. R. R. b. m. 10)..... | 320.165 |
|---|---------|

| | |
|---|------------------|
| Capitol View , 0.4 mile east of, opposite milepost 10, between tracks; top of vertical rail section (B. & O. R. R. b. m. 11)----- | Feet. 309.663 |
| Kensington , opposite milepost 11, between tracks; top of vertical rail section (B. & O. R. R. b. m. 12)----- | 300.703 |
| Garrett Park , 0.4 mile east of, opposite milepost 12, between tracks; top of vertical rail section (B. & O. R. R. b. m. 13)----- | 285.524 |
| Windham , 0.3 mile east of, opposite milepost 13, between tracks; top of vertical rail section (B. & O. R. R. b. m. 14)----- | 318.216 |
| Halpine , 0.7 mile east of, opposite milepost 14, between tracks; top of vertical rail section (B. & O. R. R. b. m. 15)----- | 372.713 |
| Halpine , 0.3 mile west of, opposite milepost 15, between tracks; top of vertical rail section (B. & O. R. R. b. m. 16)----- | 393.836 |
| Rockville , 0.5 mile east of, opposite milepost 16, between tracks; top of vertical rail section (B. & O. R. R. b. m. 17)----- | 421.685 |
| Rockville , 0.5 mile west of, opposite milepost 17, between tracks; top of vertical rail section (B. & O. R. R. b. m. 18)----- | 442.277 |
| Westmore , 0.3 mile west of, opposite milepost 18, between tracks; top of vertical rail section (B. & O. R. R. b. m. 19)----- | 457.265 |
| Derwood , opposite milepost 19, between tracks; top of vertical rail section (B. & O. R. R. b. m. 20)----- | 475.563 |
| Washington Grove , 0.7 mile east of, opposite milepost 20, between tracks; top of vertical rail section (B. & O. R. R. b. m. 21)----- | 497.156 |
| Gaithersburg , 0.6 mile east of, opposite milepost 21, between tracks; top of vertical rail section (B. & O. R. R. b. m. 22)----- | 518.824 |
| Ward , 0.1 mile east of, on south side of tracks, near milepost 22, top of vertical rail section (B. & O. R. R. b. m. 23)----- | 490.668 |
| Ward , 0.9 mile west of, south side of track near milepost 23; top of vertical rail section (B. & O. R. R. b. m. 24)----- | 446.261 |
| Clopper , 0.2 mile east of, south side of track near milepost 24; top of vertical rail section (B. & O. R. R. b. m. 25)----- | 404.372 |

At Great Falls.

| | |
|---|---------|
| Great Falls , 1.65 meters from west gate of Lock 20, Chesapeake & Ohio Canal, on capstone of south wall, 0.2 meter from extreme north and 0.45 meter from extreme east edge; bottom of square cut (C. & G. S. b. m. F)----- | 166.592 |
|---|---------|

SENECA QUADRANGLE.

[Latitude 39°-39° 15'; longitude 77° 15'-77° 30'.]

From Waring along Baltimore & Ohio R. R. to point near Tuscarora.

| | |
|---|---------|
| Waring , south side of track near milepost marked "Washington 25 miles"; top of vertical rail section (B. & O. R. R. b. m. 26)----- | 364.414 |
| Germantown , 0.5 mile east of, south side of tracks near milepost 26; top of vertical rail section (B. & O. R. R. b. m. 27)----- | 399.898 |
| Germantown , 0.5 mile west of, on south side of tracks near milepost 27; top of vertical rail section (B. & O. R. R. b. m. 28)----- | 442.132 |
| Darby , 1.5 miles west of, on south side of tracks near milepost 28; top of vertical rail section (B. & O. R. R. b. m. 29)----- | 422.575 |
| Boyd , 0.1 mile east of, on south side of tracks, near milepost 29; top of vertical rail section (B. & O. R. R. b. m. 30)----- | 417.066 |
| Buck Lodge , 0.5 mile east of, south side of tracks, near milepost 30; top of vertical rail section (B. & O. R. R. b. m. 31)----- | 431.852 |

| | |
|---|-------------------|
| Buck Lodge, 0.5 mile west of, south side of tracks, near milepost 31; top of vertical rail section (B. & O. R. R. b. m. 32)----- | Feet. 441. 610 |
| Barnesville, 1.1 miles east of, on south side of tracks, near milepost 32; top of vertical rail section (B. & O. R. R. b. m. 33)----- | 494. 929 |
| Barnesville, 0.1 mile east of, south side of tracks, near milepost 33; top of vertical rail section (B. & O. R. R. b. m. 34)----- | 508. 940 |
| Barnesville, 0.9 mile west of, south side of tracks, near milepost 34; top of vertical rail section (B. & O. R. R. b. m. 35)----- | 452. 827 |
| Dickerson, 0.7 mile east of, south side of tracks, near milepost 35; top of vertical rail section (B. & O. R. R. b. m. 36)----- | 396. 949 |
| Dickerson, 0.3 mile west of, south side of tracks, near milepost 36; top of vertical rail section (B. & O. R. R. b. m. 37)----- | 344. 318 |
| Dickerson, 1.3 miles west of, 225 feet west of milepost 37, in bridge seat of culvert, on south end of east side; copper bolt (B. & O. R. R. b. m. 38)----- | 284. 448 |
| Tuscarora, 1.3 miles east of, south side of tracks, near milepost 38; top of vertical rail section (B. & O. R. R. b. m. 39)----- | 254. 848 |

From Seneca to Whites Ferry.

| | |
|--|----------|
| Seneca, on southeast side of capstone on southwest end of Aqueduct Bridge, 0.165 meter from iron guard rail, 0.397 meter from extreme edge of capstone, and 0.06 meter from end of lower wooden beam of guard rail crossing the bridge; bottom of square cut (C. & G. S. b. m. E)----- | 198. 392 |
| Whites Ferry, about 20 meters east of bridge crossing Chesapeake & Ohio Canal, on south bank, on capstone of culvert under canal, 0.178 meter from extreme south edge of capstone; square cut (C. & G. S. b. m. V)----- | 207. 247 |

WASHINGTON QUADANGLE.

[Latitude 38° 45'-39°; longitude 76° 45'-77° 15'.]

From point near Silver Spring to point near Woodside.

| | |
|---|----------|
| Silver Spring, 0.5 mile east of, opposite milepost marked "Washing- ton 7 miles," between tracks; top of vertical rail section (B. & O. R. R. b. m. 8)----- | 327. 571 |
| Woodside, 0.3 mile east of, opposite milepost 8, between tracks; top of vertical rail section (B. & O. R. R. b. m. 9)----- | 323. 370 |

From Rives along Baltimore & Ohio E. R. to point near Branchville.

| | |
|--|---------|
| Rives, 100 feet southwest of milepost 35, southeast side of tracks, in northeast end of coping of foundation for overhead bridge; copper bolt (B. & O. R. R. b. m. 5)----- | 59. 734 |
| Hyattsville, 0.5 mile southwest of, in west corner of southeast cap- stone, northeast abutment, bridge 34 A; copper bolt (B. & O. R. R. b. m. 6)----- | 34. 704 |
| Alexandria Junction, opposite milepost 33, between tracks; top of ver- tical rail section (B. & O. R. R. b. m. 7)----- | 49. 209 |
| Riverdale, 600 feet north of, in west end of north wall of culvert; copper bolt (B. & O. R. R. b. m. 7 A)----- | 51. 982 |
| Riverdale, near, in north end of east coping of small culvert, about 400 feet north of milepost 32; copper bolt (B. & O. R. R. b. m. 8)----- | 53. 206 |
| College Park, 0.5 mile north of, in west end of north abutment of bridge; copper bolt (B. & O. R. R. b. m. 9)----- | 52. 969 |

| | |
|---|------------------|
| Berwyn, 0.2 mile south of, in west end of bridge seat, north abutment of small bridge at telegraph pole 30-17; copper bolt (B. & O. R. R. b. m. 9 A)----- | Feet. 53. 037 |
|---|------------------|

From Bowie along Pennsylvania R. R. to District line.

| | |
|--|---------|
| Bowie, 1,820 feet south of, west side of track; stone marker (P. R. R. b. m. 121a)----- | 142. 13 |
| Springfield, east side of track; stone marker (P. R. R. b. m. 122)----- | 167. 47 |
| Glendale, east side of track; stone marker (P. R. R. b. m. 123)----- | 150. 45 |
| Seabrook, 2,820 feet north of, east side of track; stone marker (P. R. R. b. m. 124)----- | 150. 44 |
| Seabrook, 3,110 feet south of, northeast coping of bridge 14; copper bolt (P. R. R. b. m. 125)----- | 135. 66 |
| Lanham, 1,960 feet south of, west coping of culvert; copper bolt (P. R. R. b. m. 126)----- | 129. 79 |
| Ardwick, 1,430 feet south of, northwest wing of bridge 15; copper bolt (P. R. R. b. m. 127)----- | 67. 42 |
| Landover, 170 feet north of, top step of northeast wing of bridge 17; copper bolt (P. R. R. b. m. 128)----- | 56. 84 |
| Magruder Avenue, bridge over Magruder Branch, east abutment, bottom step of north wing; copper bolt (P. R. R. b. m. 129)----- | 43. 40 |
| Magruder, 1,865 feet south of, northeast wing of bridge 18, at level of bridge seat; copper bolt (P. R. R. b. m. 130)----- | 21. 19 |
| Magruder, 4,980 feet south of (Maryland and District of Columbia boundary line), west side of track; stone monument (P. R. R. b. m. 130a)----- | 48. 80 |

WILLIAMSPORT QUADRANGLE.

[Latitude 39° 30'–39° 45'; longitude 77° 45'–78°.]

From Williamsport along Chesapeake & Ohio Canal to Cherry Run.

| | |
|---|----------|
| Williamsport, on west side of aqueduct of Chesapeake & Ohio Canal over Conococheague River, on top surface of stone; square cavity marked "BB□M., U.S.C.S., 1878"----- | 357. 750 |
| Williamsport, 7 miles west of; cut on coping stone of Dam No. 5, Potomac River, lettered "CB□M., U.S.C.S., 1878"----- | 371. 630 |
| Williamsport, 7.8 miles west of, on top layer of stone of second lock above Dam No. 5, in Chesapeake & Ohio Canal; square cut lettered "No.VIB□M., U.S.C.S., 1878"----- | 371. 358 |
| Williamsport, 9.2 miles west of, on top layer of stone at west end of sixth lock above Dam No. 5; square cut lettered "DB□M., U.S.C.S., 1878"----- | 404. 241 |

APPENDIX B.

SECONDARY ELEVATIONS.

Secondary elevations from records and topographic maps of the United States Geological Survey, including altitudes of well-known summits and other useful elevations, are given below. These elevations are approximate only and should not be used for accurate work.

| Locality. | Quadrangle. | County. | Elevation. Feet. |
|---|---------------------|-----------------------------|---------------------|
| Abingdon..... | Gunpowder..... | Harford..... | 160 |
| Backbone Mountain, the highest point in Maryland..... | Oakland..... | Garrett..... | 3,340 |
| Boyer Knob, triangulation station..... | Flintstone..... | Alleghany..... | 1,564 |
| Braddock Heights..... | Antietam..... | Frederick..... | 899 |
| Brandywine..... | Brandywine..... | Prince Georges..... | 233 |
| Breakneck Hill..... | Flintstone..... | Alleghany..... | 1,572 |
| Bull Mountain..... | Elkton..... | Cecil..... | 306 |
| Black Hill..... | do..... | do..... | 311 |
| Dans Rock, triangulation station..... | Frostburg..... | Alleghany..... | 2,896 |
| Darlington..... | Havre de Grace..... | Harford..... | 324 |
| Davidsonville..... | Owensville..... | Anne Arundel..... | 185 |
| Denton..... | Denton..... | Caroline..... | 37 |
| Druid Lake, water surface..... | Baltimore..... | Baltimore..... | 217 |
| Eagle Rock..... | Oakland..... | Garrett..... | 3,162 |
| East New Market..... | Hurlock..... | Dorchester..... | 43 |
| Egg Hill..... | Elkton..... | Cecil..... | 442 |
| Elbow Ridge..... | Hancock..... | Washington..... | 995 |
| Eldersburg..... | Ellicott..... | Carroll..... | 642 |
| Fairview Mountain, triangulation station..... | Williamsport..... | Washington..... | 1,700 |
| Federsburg..... | Hurlock..... | Caroline..... | 29 |
| Forest Hill..... | Belair..... | Harford..... | 544 |
| Fox Gap..... | Antietam..... | Frederick-Washington..... | 1,064 |
| George Hill..... | Accident..... | Garrett..... | 3,004 |
| Granite..... | Ellicott..... | Baltimore..... | 461 |
| Grays Hill, triangulation station..... | Elkton..... | Cecil..... | 268 |
| Gyndon..... | Ellicott..... | Baltimore..... | 695 |
| Henderson..... | Barclay..... | Caroline..... | 58 |
| High Knob..... | Ijamsville..... | Frederick..... | 1,531 |
| High Rock..... | Hagerstown..... | Washington..... | 1,822 |
| High Rock, triangulation station..... | Grantsville..... | Garrett..... | 3,000 |
| Hunting Hill..... | Rockville..... | Montgomery..... | 461 |
| Kemptown..... | Mount Airy..... | Frederick..... | 688 |
| Knobly Mountain..... | Frostburg..... | Alleghany..... | 1,959 |
| Lambs Knoll..... | Antietam..... | Frederick - Washington..... | 1,772 |
| Leitersburg..... | Hagerstown..... | Washington..... | 595 |
| Manchester..... | Westminster..... | Carroll..... | 953 |
| Marsh Hill..... | Accident..... | Garrett..... | 3,073 |
| Maryland Heights..... | Antietam..... | Washington..... | 1,468 |
| Meadow Mountain, triangulation station..... | Grantsville..... | Garrett..... | 3,031 |
| Mechanicsville..... | Leonardtown..... | St. Mary..... | 165 |
| Middleburg..... | Taneytown..... | Carroll..... | 473 |
| Montebello Lake, water surface..... | Baltimore..... | Baltimore..... | 163 |
| Mount Airy..... | Mount Airy..... | Carroll..... | 810 |
| Mount Pleasant..... | Taneytown..... | do..... | 816 |

| Locality. | Quadrangle. | County. | Elevation. |
|--|------------------|---------------------|--------------|
| | | | <i>Feet.</i> |
| Nebo Mountain..... | Grantsville..... | Garrett..... | 2,604 |
| Nicholas Mountain..... | Flintstone..... | Alleghany..... | 1,506 |
| Observatory Hill..... | Oakland..... | Garrett..... | 2,767 |
| Owensville..... | Owensville..... | Anne Arundel..... | 182 |
| Pine Rock..... | Antietam..... | Frederick..... | 1,125 |
| Pleasantville..... | Belair..... | Harford..... | 530 |
| Pooksville..... | Seneca..... | Montgomery..... | 400 |
| Quirauk Mountain, triangulation station..... | Hagerstown..... | Washington..... | 2,145 |
| Randallstown..... | Ellicott..... | Baltimore..... | 585 |
| Ridge Hill..... | Ijamsville..... | Frederick..... | 1,260 |
| Ridgely..... | Denton..... | Caroline..... | 67 |
| Ringgold..... | Hagerstown..... | Washington..... | 769 |
| Roland Lake..... | Baltimore..... | Baltimore..... | 225 |
| Roundtop..... | Hancock..... | Washington..... | 1,388 |
| St. John Rock..... | Frostburg..... | Garrett..... | 2,930 |
| Sampson Rock, triangulation station..... | do..... | do..... | 2,942 |
| Savage..... | Laurel..... | Howard..... | 153 |
| Shriver Ridge..... | Flintstone..... | Alleghany..... | 1,522 |
| Sideling Hill, triangulation station..... | Pawpaw..... | Washington..... | 1,635 |
| Silver Run..... | Taneytown..... | Carroll..... | 707 |
| Stratford Ridge..... | Flintstone..... | Alleghany..... | 831 |
| Sugarloaf Mountain, triangulation station..... | Ijamsville..... | Frederick..... | 1,281 |
| Tinonium..... | Baltimore..... | Baltimore..... | 392 |
| Truesdall Heights..... | Oakland..... | Garrett..... | 2,809 |
| Uniontown..... | Taneytown..... | Carroll..... | 659 |
| Upper Marlboro..... | Washington..... | Prince Georges..... | 39 |
| Warrior Mountain..... | Flintstone..... | Alleghany..... | 2,135 |
| West Elkridge..... | Relay..... | Howard..... | 228 |
| Winding Ridge..... | Accident..... | Garrett..... | 2,866 |
| Wolf Rock..... | Frostburg..... | Alleghany..... | 2,796 |



INDEX.

| A. | Page. | | Page. |
|----------------------------------|--|------------------------------|----------------|
| Aberdeen..... | 17, 18, 61 | Big Spring..... | 41 |
| Accident..... | 45 | Bissell..... | 39 |
| Accident quadrangle..... | 45 | Black Bear..... | 52 |
| Adamstown..... | 49, 62 | Black Oak..... | 58 |
| Aiken..... | 61 | Blacks..... | 11 |
| Alberton..... | 55 | Bloomington..... | 52 |
| Alexandria Junction..... | 70 | Blue Mount..... | 66 |
| Allegany County..... | 42, 47 | Blue Mountain..... | 38, 39 |
| Allibone..... | 19 | Bolivar..... | 33, 34 |
| Altamont..... | 65 | Bond..... | 53 |
| American Corners..... | 13 | Bosley..... | 20 |
| Ammendale..... | 23, 63 | Bowie..... | 23, 63, 64, 71 |
| Annapolis..... | 22, 47 | Boyd..... | 69 |
| Annapolis Junction..... | 23, 63 | Bradenbaugh..... | 19 |
| Annapolis quadrangle..... | 22, 47 | Bradshaw..... | 59 |
| Anne Arundel County..... | 20, 47 | Brady..... | 57 |
| Antietam quadrangle..... | 32-34, 48-49 | Branchville..... | 63 |
| Arbutus..... | 68 | Bridewell..... | 63 |
| Ardwick..... | 71 | Brink..... | 31 |
| Arundel..... | 64 | Brookview..... | 14 |
| Ashton..... | 24 | Brownsville..... | 33 |
| Avondale..... | 35 | Bruceville..... | 36 |
| | | Brunswick..... | 33, 48 |
| B. | | Buck Lodge..... | 69, 70 |
| Bacon Hill..... | 54 | Buckeystown..... | 62 |
| Bailey, C. B., work of..... | 43 | Buckley, G. S., work of..... | 20 |
| Bailey, George, work of..... | 10, 17 | Bucktown..... | 14 |
| Baldwin, D. H., work of..... | 8 | Buena Vista Spring..... | 37 |
| Baldwin..... | 54 | Burrsville..... | 13 |
| Baltimore..... | 49, 50, 51 | Burtonsville..... | 23 |
| Baltimore & Ohio R. R..... | 17, 20, 21, 23, 29, 30, 32, 33, 35, 44, 45, 46, 47, 48, 50, 52, 53, 55, 56, 57, 58, 59, 61, 62, 63, 64, 65, 67, 68, 69, 70 | C. | |
| Baltimore County..... | 17, 20, 47 | Cabin John Bridge..... | 9 |
| Baltimore quadrangle..... | 20, 49-51 | Calvert..... | 17 |
| Barclay..... | 11 | Calverton..... | 50 |
| Barclay quadrangle..... | 11 | Cambridge..... | 12 |
| Barkeedale..... | 54 | Camp Springs..... | 25 |
| Barnesville..... | 70 | Campbell..... | 16 |
| Bartholows..... | 64, 65 | Capitol View..... | 69 |
| Bayview..... | 17 | Cardiff..... | 18 |
| Belair..... | 19 | Caroline County..... | 10 |
| Belair quadrangle..... | 18-19 | Carroll County..... | 20, 35, 47 |
| Belcamp..... | 52 | Catoctin..... | 37, 48 |
| Beltsville..... | 63 | Catonsville..... | 20 |
| Belvedere..... | 61 | Cavetown..... | 39 |
| Bench marks, description of..... | 6 | Cayots Corners..... | 10 |
| forms of, plate showing..... | 5 | Cecil County..... | 10, 17, 47 |
| Benfield..... | 22 | Cecilton quadrangle..... | 10-11 |
| Benson Center..... | 11 | Cedar Cliff..... | 57 |
| Bentley..... | 10, 66 | Cedar Grove..... | 31 |
| Benton Corners..... | 11 | Centerville..... | 12 |
| Berlin..... | 16 | Charles County..... | 26 |
| Berwyn..... | 71 | Charlestown..... | 17, 54 |
| Betterton quadrangle..... | 12, 52 | Charlesville..... | 30 |
| | | Cherry Run..... | 59 |
| | | Chesapeake..... | 17 |

| | Page. | | Page. |
|--|------------|------------------------------------|----------------|
| Chesapeake & Ohio Canal | 9, | Dickerson | 70 |
| 21, 31, 32, 34, 41, 43, 44, 56, 59, 67, 69, 71 | | Dorchester County | 10 |
| Chesapeake Beach R. R. | 25 | Dorsey | 23, 67 |
| Chesapeake City | 10 | Doubs | 43, 49, 63 |
| Chesapeake Junction | 25 | Dover quadrangle | 10-11 |
| Chestertown quadrangle | 12 | Drawbridge | 15 |
| Chesterville | 11 | Drum Point quadrangle | 14 |
| Chewsville | 39 | Dryrun | 41 |
| Childs | 54 | | |
| Choptank quadrangle | 12 | E. | |
| Clarksburg | 22 | Earleville | 19 |
| Clarksville | 23, 30 | Easton | 13 |
| Clarysville | 44 | Eden | 15 |
| Classification, standard of | 5-6 | Eder | 54 |
| Clayton | 59 | Edersville | 13 |
| Clear Spring | 41 | Edgemont | 29 |
| Clifton Beach | 28, 29 | Edwards Ferry | 23 |
| Clinton | 25 | Elloak | 23 |
| Clopper | 69 | Elk Garden quadrangle | 53-55 |
| Cimet, C. A., work of | 10 | Elk Ridge | 67 |
| Coast and Geodetic Survey, elevations by | 47-71 | Elkton | 17, 53 |
| Coates, W. G., work of | 20 | Elkton quadrangle | 17, 53-54 |
| Cockeysville | 20, 51 | Ellerslie | 57 |
| Colbourne | 16 | Ellerton | 69 |
| College Park | 70 | Ellicott City | 21, 55 |
| Columbia | 23 | Ellicott quadrangle | 21, 55-56 |
| Conaways | 22 | Elvaton | 23 |
| Concord | 13 | Emmitsburg | 26 |
| Conowingo | 18, 60 | Emmitsburg quadrangle | 26-28 |
| Contee | 63 | Evitts Creek | 58 |
| Cooke, C. E., work of | 24 | | |
| Cooperation by the State | 5 | F. | |
| Corbett | 66 | Fairland | 23 |
| Cowenton | 59 | Fairview (Elkton quadrangle) | 17 |
| Crabster | 36 | Fairview (Williamsport quadrangle) | 41 |
| Crabtree | 53 | Farmer, R. A., work of | 29 |
| Crapo quadrangle | 14 | Federal Hill | 19 |
| Cresap | 57 | Federalburg | 13 |
| Crisfield | 16 | Flintstone | 43, 44 |
| Crisfield quadrangle | 16 | Flintstone quadrangle | 43-44, 55 |
| Cross Roads | 28 | Florence | 29 |
| Crumpton | 11 | Floyd | 44, 45 |
| Cumberland | 44, 56, 57 | Forestville | 25 |
| Cumberland & Pennsylvania R. R. | 44 | Fowlesburg | 21 |
| Cumberland Valley R. R. | 38, 41 | Foys Hill | 61 |
| Cylburn | 51 | Franklin City | 18 |
| | | Frankville | 53 |
| D. | | Frederick | 39, 65 |
| Daingerfield, J. S. B., work of | 17 | Frederick County | 29, 32, 35, 67 |
| Damascus | 29 | Frederick Junction | 39, 65 |
| Darby | 69 | Fredericktown | 11 |
| Darlington | 18 | Frenchtown | 69 |
| Darnestown | 32 | Friendly | 25 |
| Datum, inland | 7 | Friendsville | 65 |
| Davis | 55 | Frostburg | 44 |
| Dawson | 62 | Frostburg quadrangle | 44, 58-59 |
| Dawsonville | 32 | Funkstown | 69 |
| Day | 29 | | |
| Deal Island quadrangle | 16 | G. | |
| Deer Park | 46, 65 | Galtier | 55 |
| Deerfield | 37 | Gaithersburg | 21, 69 |
| Delmar | 15 | Galt | 55 |
| Denton | 13 | Gamber | 23 |
| Denton quadrangle | 13 | Gapland | 23 |
| Derwood | 69 | Garrett County | 62, 67 |
| Detour | 37 | Garrett Park | 21, 69 |
| | | Georges Creek & Cumberland R. R. | 44 |

| | Page. | | Page. |
|-------------------------------------|------------------------|---------------------------------|--------------|
| Germantown..... | 32, 69 | Indian Head quadrangle..... | 26-28 |
| Glenburnie..... | 22 | Ingleside..... | 11 |
| Glendale..... | 71 | Iron Hill..... | 53 |
| Golden Hill..... | 14 | Ironsides..... | 28 |
| Goldsboro..... | 11 | | J. |
| Goldsborough, Charles, work of..... | 10 | Jackson..... | 61 |
| Gorman..... | 45 | Jefferson..... | 33 |
| Gorsuch..... | 55 | Jessups..... | 64 |
| Goshen..... | 31 | Jones..... | 22 |
| Graceham..... | 37 | Jopps..... | 59 |
| Grantsville..... | 45 | | K. |
| Grantsville quadrangle..... | 44-45 | Kearney..... | 46 |
| Gray..... | 55 | Keedysville..... | 24, 48 |
| Grayton..... | 28 | Kensington..... | 69 |
| Great Falls..... | 9, 31, 69 | Kent County..... | 10 |
| Green, B. J., work of..... | 10 | Keyser..... | 45 |
| Green, T. A., work of..... | 29 | Keyser quadrangle..... | 62 |
| Green Ridge..... | 43 | Kingsdale..... | 36 |
| Greensboro..... | 13 | Klej Grange..... | 16 |
| Griffin..... | 13 | Knorville..... | 48 |
| Grimes..... | 35, 42 | | L. |
| Gum Swamp..... | 14 | Lafayette..... | 50 |
| Gumpowder quadrangle..... | 58-59 | Lake..... | 51 |
| | H. | Lakesville..... | 14 |
| Hagerstown..... | 38, 39, 40, 41, 42, 59 | Lanham..... | 71 |
| Hagerstown quadrangle..... | 38-41, 59 | Lansdowne..... | 67 |
| Halethorpe..... | 67, 68 | Lauraville..... | 20 |
| Halfway..... | 42 | Laurel..... | 23, 63 |
| Halpine..... | 69 | Laurel quadrangle..... | 23-24, 63-64 |
| Hampstead..... | 21 | Layhill..... | 31 |
| Hancock..... | 43, 59, 67 | Laytonsville..... | 31 |
| Hancock quadrangle..... | 43, 59 | Lefever, J. H., work of..... | 10 |
| Hanesville..... | 12 | Le Gore..... | 36 |
| Hanover..... | 67 | Leonard, T. D., work of..... | 10 |
| Harewood Park..... | 58 | Leslie..... | 17, 54 |
| Harford County..... | 17, 47 | Lewistown..... | 37 |
| Harman..... | 68 | Libertytown..... | 29, 30 |
| Harpers Ferry..... | 32, 34 | Lime Kiln..... | 62 |
| Harrington quadrangle..... | 13 | Linchester..... | 13 |
| Harris, J. M., work of..... | 32, 35 | Linden..... | 68 |
| Harwood..... | 67 | Linkwood..... | 13 |
| Havre de Grace..... | 18, 60, 61 | Linwood..... | 35 |
| Havre de Grace quadrangle..... | 17-18, 60-61 | Lisbon..... | 29 |
| Henryton..... | 55 | Little Orleans..... | 43, 56, 67 |
| Herring Run..... | 51 | Locust Grove..... | 11, 12 |
| High Point..... | 19 | Longridge..... | 15 |
| Highfield..... | 37 | Longwoods..... | 12 |
| Hillsboro..... | 13 | Loreley..... | 59 |
| Hilltop..... | 28 | Louden Park..... | 50 |
| Hobbs..... | 13 | Lowndes..... | 57 |
| Hodges, J. W., work of..... | 10, 17, 20 | Loys..... | 37 |
| Hollingsworth..... | 11 | Luthersville..... | 51 |
| Hollofield..... | 21, 55 | | M. |
| Hoods Mill..... | 64 | McAleer..... | 36 |
| Howard County..... | 29, 47 | McConchle..... | 28, 29 |
| Hoyes..... | 45 | McGinnes..... | 11 |
| Hurlock quadrangle..... | 13-14 | McKenzie..... | 57 |
| Hutchins, Ralph, work of..... | 20, 29 | McNair, A. F., work of..... | 26 |
| Hutton..... | 66 | Macton..... | 19 |
| Huttons Switch..... | 65 | Magnolia..... | 58 |
| Hyattstown..... | 30 | Magruder..... | 71 |
| Hyattsville..... | 79 | Manchester..... | 21 |
| | I. | Maps, topographic, list of..... | 7-8 |
| Iamsville..... | 61 | Mardela Springs..... | 15 |
| Iamsville quadrangle..... | 30, 61-62 | Marion..... | 15 |
| Ichester..... | 55 | | |

| | Page. | | Page. |
|--|------------------|--|------------|
| Marriottsville..... | 55 | Oldtown..... | 44, 56 |
| Marshall Hall..... | 26 | Olney..... | 31 |
| Martinsburg quadrangle..... | 34-35 | Orange Grove..... | 68 |
| Marydel..... | 11 | Osborne..... | 61 |
| Maryland Electric Ry..... | 22 | Oxford quadrangle..... | 12 |
| Mason and Dixon..... | 41 | | |
| Massey..... | 11 | P. | |
| Maugansville..... | 38, 41 | Palmer, W. C., work of..... | 10, 20 |
| Medford..... | 35 | Park..... | 44 |
| Melvale..... | 51 | Parkton..... | 66 |
| Middle River..... | 58 | Parkton quadrangle..... | 19, 66 |
| Middleburg..... | 36 | Parkville..... | 20 |
| Middlepoint..... | 40 | Parsonsburg..... | 16 |
| Middletown..... | 34 | Patapsco..... | 68 |
| Millington..... | 11 | Patuxent..... | 68 |
| Milton..... | 12 | Pawpaw quadrangle..... | 43, 67 |
| Mondel..... | 35 | Pen Mar..... | 38 |
| Monkton..... | 19 | Pennsylvania R. R..... | 19, |
| Monrovia..... | 61, 65 | 20, 25, 47, 50, 52, 53, 58, 60, 64, 66, 71 | |
| Montevideo..... | 64 | Perrymansville..... | 52 |
| Montgomery County..... | 8-10, 24, 26, 47 | Perryville..... | 60 |
| Morgan..... | 64 | Personnel, record of..... | 5 |
| Motters..... | 38 | Peters Corners..... | 11 |
| Mount Airy Junction..... | 64 | Petersville..... | 33 |
| Mount Airy quadrangle..... | 29, 64-65 | Pettibone, O. L., work of..... | 10, 17 |
| Mount Carmel..... | 19 | Philadelphia, Baltimore & Washington R. R..... | 11, |
| Mount Hope..... | 28 | 17, 18, 22 | |
| Mount Pleasant..... | 30 | Philadelphia, Wilmington & Baltimore R. R..... | 16 |
| Mount Royal..... | 49 | Philopolis..... | 19 |
| Mount Savage..... | 44 | Phoenix..... | 66 |
| Mount Savage Junction..... | 57 | Pikesville..... | 20 |
| Mount Tabor..... | 34 | Piney Creek..... | 36 |
| Mount Washington..... | 20, 51 | Piney Grove..... | 44 |
| Mount Winans..... | 50 | Pinto..... | 57 |
| Mountain Lake Park..... | 65 | Pisgah..... | 27 |
| Muirkirk..... | 63 | Pittsville quadrangle..... | 16 |
| Myersville..... | 34, 40 | Pocomoke City..... | 15 |
| | | Point of Rocks..... | 48 |
| N. | | Pomonkey..... | 26, 27 |
| Nanjemoy quadrangle..... | 28-29 | Poolesville..... | 32 |
| Nanticoke quadrangle..... | 15 | Poplar..... | 58 |
| New Germany..... | 44 | Port Deposit..... | 18 |
| New Glatz..... | 26 | Port Tobacco..... | 27 |
| New London..... | 30 | Posey's wharf..... | 27 |
| New Midway..... | 36 | Potomac..... | 57 |
| New Windsor..... | 35 | Potomac Avenue..... | 30 |
| New York, Philadelphia & Norfolk R. R..... | 15 | P'att..... | 44 |
| Newark..... | 16 | Precise leveling..... | 8-10 |
| Newton..... | 13 | Primary leveling..... | 10-46 |
| Norbeck..... | 31 | Prince Georges County..... | 20, 26, 47 |
| Norfolk & Western Ry..... | 34 | Princess Anne..... | 15 |
| North Branch..... | 56 | Princess Anne quadrangle..... | 15 |
| North Junction..... | 39 | Principio..... | 18, 60 |
| Northeast..... | 54 | Publication, previous..... | 5 |
| Northern Central Ry..... | 36 | Pumphrey..... | 22 |
| | | Pylesville..... | 18, 19 |
| O. | | | |
| Oak Crest..... | 63 | Q. | |
| Oak Grove, Del..... | 14 | Quantico..... | 15 |
| Oakington..... | 60 | Queen Annes County..... | 10 |
| Oakland..... | 45, 65, 66 | Quenponco..... | 16 |
| Oakland Park..... | 65 | | |
| Oakland quadrangle..... | 45-46, 65-66 | R. | |
| Oakton..... | 45 | Rawlings..... | 57 |
| Ocean City quadrangle..... | 16 | Redhouse..... | 45 |
| Odenton..... | 22, 68 | Reels Mill..... | 61, 62 |
| Oella..... | 21, 55 | Reisterstown..... | 21 |
| | | Relay..... | 67, 68 |

| | Page. | | Page. |
|---------------------------------------|--------------|-----------------------------|--------------------|
| Relay quadrangle..... | 22-23, 67-68 | Stemmer's Run..... | 56 |
| Reliance..... | 14 | Stepney..... | 52 |
| Rhodesdale..... | 14 | Stillpond..... | 12 |
| Ridgely..... | 13 | Stony Run..... | 68 |
| Ridgeville..... | 29 | Sudlersville..... | 11 |
| Rising Sun..... | 18 | Sunnyside..... | 63 |
| Ritchie..... | 25 | Swanton..... | 52, 53 |
| Riverdale..... | 70 | Sykesville..... | 21, 55, 56 |
| Rives..... | 70 | | |
| Robert..... | 57 | | T. |
| Roberts..... | 11, 12 | Talbot County..... | 10 |
| Rockdale..... | 21 | Taneytown..... | 36 |
| Rockville..... | 31, 69 | Taneytown quadrangle..... | 35-36 |
| Rockville quadrangle..... | 30-31, 68-69 | Tanyard..... | 12, 13 |
| Rocky Ridge..... | 37 | Taylor..... | 19 |
| Robersville..... | 33 | Taylor'sville..... | 29 |
| Rosedale..... | 51 | Texas..... | 51 |
| Rossville..... | 58 | Thayerville..... | 45, 46 |
| Ruxton..... | 51 | Thurmont..... | 37 |
| | | Timonium..... | 20 |
| | S. | Tolchester quadrangle..... | 12 |
| Sabillasville..... | 37 | Towson..... | 20 |
| St. Denis..... | 67 | Trappe..... | 12 |
| St. James..... | 42 | Trump..... | 19 |
| St. Michaels quadrangle..... | 12 | Tufts, W. O., work of..... | 29 |
| Salisbury..... | 15 | Tuscarora..... | 32, 62, 70 |
| Salisbury quadrangle..... | 15 | Twiley..... | 16 |
| Sandy Hook (Antietam quadrangle)..... | 32, 33 | | U. |
| Sandy Hook (Belair quadrangle)..... | 19 | Union Bridge..... | 35 |
| Sandy Spring..... | 30 | Union Mills..... | 36 |
| Sang Run..... | 45 | Unionville..... | 29 |
| Sassafras..... | 11 | Unity..... | 30, 31 |
| Savage..... | 63 | Urbana..... | 30 |
| Sea level, mean, definition of..... | 6 | | V. |
| Seabrook..... | 71 | Vale Summit..... | 44 |
| Seaford quadrangle..... | 14 | Van Bibber..... | 59 |
| Secondary elevations..... | 72-73 | Vienna..... | 15 |
| Security..... | 39 | Vineyard..... | 67 |
| Seitz, R. C., work of..... | 25 | | W. |
| Semper, C. H., work of..... | 10, 17, 35 | Wagners Crossroads..... | 40 |
| Seneca..... | 70 | Wakefield..... | 35 |
| Seneca quadrangle..... | 32, 69-70 | Walkersville..... | 30 |
| Seyern..... | 22, 68 | Ward..... | 69 |
| Sewell..... | 59 | Waring..... | 69 |
| Shane..... | 19 | Washington County..... | 32, 35, 42, 47 |
| Sharpsburg..... | 34, 35 | Washington Grove..... | 31, 69 |
| Sharretts..... | 36 | Washington Junction..... | 48, 49 |
| Shawan..... | 20 | Washington quadrangle..... | 8-10, 24-26, 70-71 |
| Shepherdstown..... | 34 | Waterbury..... | 22 |
| Sherwood..... | 20, 51 | Waterloo..... | 23 |
| Shockeys..... | 39 | Watersville..... | 64 |
| Silver Spring..... | 70 | West Baltimore..... | 49 |
| Skipshish..... | 66 | West Beaver..... | 40 |
| Smith, C. M., work of..... | 17, 43 | West Friendship..... | 21 |
| Smithsburg..... | 39, 40 | Western Maryland Ry..... | 35, 38, 39, 41 |
| Smithville..... | 14 | Westminster..... | 21, 35 |
| Smoketown..... | 40 | Westminster quadrangle..... | 21 |
| Snow Hill..... | 16 | Westmore..... | 69 |
| Snow Hill quadrangle..... | 16 | Westover..... | 15 |
| Somerset County..... | 10 | Weverton..... | 33, 48 |
| Sparks..... | 19, 66 | Wheaton..... | 31 |
| Spencerville..... | 23 | Whiteburg..... | 15 |
| Spielman..... | 42 | Whiteford..... | 18 |
| Spring Mills..... | 35 | Whitehall..... | 19 |
| Springfield..... | 71 | Whitehaven..... | 55 |
| Stafford quadrangle..... | 29 | | |

| | Page. | | Page. |
|-------------------------------|------------|-------------------------------|--------|
| Whiteleysburg..... | 13 | Wolfsville..... | 40 |
| Whites Ferry..... | 70 | Wood, Hargraves, work of..... | 17, 43 |
| Whitman, J. M., work of..... | 10 | Woodberry..... | 50 |
| Wicomico County..... | 10 | Woodbine..... | 64 |
| Williamsport..... | 42, 71 | Woodensburg..... | 21 |
| Williamsport quadrangle..... | 41-42, 71 | Woodsboro..... | 36 |
| Williston..... | 13 | Woodside..... | 70 |
| Winans..... | 22, 67, 68 | Woodstock..... | 21, 55 |
| Windham..... | 69 | Woolford..... | 12 |
| Wingate..... | 14 | Worcester County..... | 10 |
| Winstead, W. R., work of..... | 32 | Wye Mills..... | 12 |



DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

BULLETIN 564

RESULTS OF SPIRIT LEVELING IN OKLAHOMA

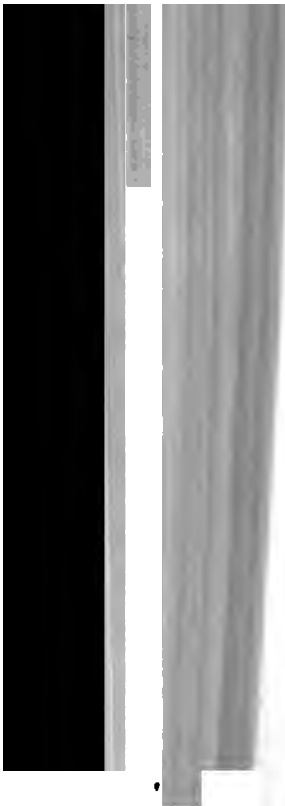
1895 TO 1912, INCLUSIVE

R. B. MARSHALL, CHIEF GEOGRAPHER

PART OF WORK DONE IN COOPERATION WITH TERRITORY OF OKLAHOMA,
1905 TO 1907, INCLUSIVE, AND WITH STATE OF OKLAHOMA,
1908, 1911, AND 1912



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1914



CONTENTS.

| | Page. |
|--|-------|
| Introduction..... | 5 |
| Cooperation..... | 5 |
| Previous publication..... | 5 |
| Personnel..... | 5 |
| Classification..... | 5 |
| Bench marks..... | 5 |
| Datum..... | 6 |
| Topographic maps..... | 7 |
| Primary leveling..... | 7 |
| Wyandotte quadrangle (Delaware and Ottawa counties)..... | 7 |
| Vinita quadrangle (Craig County)..... | 9 |
| Nowata quadrangle (Nowata and Washington counties)..... | 10 |
| Claremore quadrangle (Rogers, Tulsa, and Wagoner counties)..... | 12 |
| Pryor quadrangle (Mayes County)..... | 14 |
| Siloam Springs quadrangle (Delaware County)..... | 15 |
| Winslow quadrangle (Sequoyah County)..... | 16 |
| Tahlequah quadrangle (Adair, Cherokee, and Sequoyah counties)..... | 17 |
| Muskogee quadrangle (Cherokee, Muskogee, and Wagoner counties)..... | 18 |
| Okmulgee quadrangle (Muskogee, Okmulgee, and Wagoner counties)..... | 20 |
| Nuyaka quadrangle (Creek County)..... | 21 |
| Wewoka quadrangle (Hughes and Okfuskee counties)..... | 21 |
| Canadian quadrangle (McIntosh and Pittsburg counties)..... | 22 |
| Sansbois quadrangle (Haskell County)..... | 23 |
| Sallisaw quadrangle (Haskell, Le Flore, and Sequoyah counties)..... | 24 |
| Fort Smith quadrangle (Le Flore County)..... | 26 |
| Poteau Mountain quadrangle (Le Flore County)..... | 26 |
| Winding Stair quadrangle (Le Flore County)..... | 27 |
| Tuskahoma quadrangle (Latimer and Pushmataha counties)..... | 29 |
| McAlester quadrangle (Pittsburg County)..... | 31 |
| Coalgate quadrangle (Coal and Pittsburg counties)..... | 32 |
| Stonewall quadrangle (Pontotoc County)..... | 34 |
| Pauls Valley quadrangle (Garvin and McClain counties)..... | 35 |
| Ruah Springs quadrangle (Garvin, Grady, and Stephens counties)..... | 37 |
| Chickasha quadrangle (Canadian and Grady counties)..... | 38 |
| Seminole quadrangle, comprising Maud, Prague, Seminole, and Shawnee 15' quadrangles (Pottawatomie and Seminole counties)..... | 40 |
| Sac and Fox 30' quadrangle, comprising Agra, Chandler, Mallon, and Sac and Fox 15' quadrangles (Lincoln County)..... | 41 |
| Pawnee quadrangle (Pawnee and Payne counties)..... | 41 |
| Hominy quadrangle (Creek, Osage, and Tulsa counties)..... | 42 |
| Addington quadrangle (Jefferson and Stephens counties)..... | 42 |
| Ardmore quadrangle (Carter, Love, and Murray counties)..... | 43 |
| Tishomingo quadrangle (Johnston and Marshall counties)..... | 44 |

| Primary leveling—Continued. | | Page. |
|---|--|-------|
| Atoka quadrangle (Atoka and Bryan counties) | | 45 |
| Antlers quadrangle (Atoka, Choctaw, and Pushmataha counties) | | 46 |
| Alikchi quadrangle (Choctaw and Pushmataha counties) | | 48 |
| Lukfata quadrangle (McCurtain County) | | 48 |
| Duqueen quadrangle (McCurtain County) | | 49 |
| Shawneetown quadrangle (McCurtain County) | | 49 |
| Horatio quadrangle (McCurtain County) | | 50 |
| Clarksville quadrangle (Choctaw County) | | 50 |
| Paris quadrangle (Choctaw County) | | 51 |
| Bonham quadrangle (Bryan County) | | 51 |
| Denison quadrangle (Marshall County) | | 52 |
| Gainesville quadrangle (Love County) | | 52 |
| Montague quadrangle (Jefferson County) | | 53 |
| Addington, Rush Springs, and Chickasha quadrangles (Canadian, Grady, Jefferson, and Stephens counties) | | 54 |
| Pawhuska quadrangle (Osage County) | | 56 |
| Claremore, Hominy, Pawnee, Pond Creek, Newkirk, and Washunga quadrangles (Creek, Grant, Kay, Osage, Pawnee, Payne, and Tulsa counties) | | 62 |
| Agra, Chandler, Mallon, Maud, Prague, Sac and Fox 15', and Shawnee quadrangles (Lincoln, Payne, and Pottawatomie counties) | | 81 |
| Guthrie, Kingfisher, and Perkins quadrangles (Canadian, Kingfisher, Lincoln, Logan, and Oklahoma counties) | | 88 |
| Edmond, Luther, McComb, McLoud, Moore, and Norman quadrangles (Canadian, Cleveland, Lincoln, Logan, McClain, Oklahoma, and Pottawatomie counties) | | 92 |
| Platte National Park (Murray County) | | 102 |
| Appendix A: Elevations adjusted by the Coast and Geodetic Survey from precise leveling | | 103 |
| Appendix B: Secondary elevations | | 114 |
| Index | | 115 |

ILLUSTRATION.

| | |
|--|------------|
| PLATE I. Geological Survey bench marks | Page. 5 |
|--|------------|



U.S. GEOLOGICAL SURVEY MARKS

THE U.S. GEOLOGICAL SURVEY HAS A LARGE STOCK OF THESE MARKS FOR SALE AT COST. THEY ARE AVAILABLE FOR THE PURCHASE OF ANY STATE OR TERRITORY. THE MARKS ARE MADE OF BRASS AND ARE OF THE FOLLOWING SIZES: 1. 10 INCHES DIAMETER, 1/2 INCH THICK. 2. 6 INCHES DIAMETER, 1/4 INCH THICK. 3. 4 INCHES DIAMETER, 1/4 INCH THICK. 4. 2 INCHES DIAMETER, 1/4 INCH THICK. 5. 1 INCH DIAMETER, 1/4 INCH THICK. 6. 1/2 INCH DIAMETER, 1/4 INCH THICK. 7. 1/4 INCH DIAMETER, 1/4 INCH THICK. 8. 1/8 INCH DIAMETER, 1/4 INCH THICK. 9. 1/16 INCH DIAMETER, 1/4 INCH THICK. 10. 1/32 INCH DIAMETER, 1/4 INCH THICK. 11. 1/64 INCH DIAMETER, 1/4 INCH THICK. 12. 1/128 INCH DIAMETER, 1/4 INCH THICK. 13. 1/256 INCH DIAMETER, 1/4 INCH THICK. 14. 1/512 INCH DIAMETER, 1/4 INCH THICK. 15. 1/1024 INCH DIAMETER, 1/4 INCH THICK. 16. 1/2048 INCH DIAMETER, 1/4 INCH THICK. 17. 1/4096 INCH DIAMETER, 1/4 INCH THICK. 18. 1/8192 INCH DIAMETER, 1/4 INCH THICK. 19. 1/16384 INCH DIAMETER, 1/4 INCH THICK. 20. 1/32768 INCH DIAMETER, 1/4 INCH THICK. 21. 1/65536 INCH DIAMETER, 1/4 INCH THICK. 22. 1/131072 INCH DIAMETER, 1/4 INCH THICK. 23. 1/262144 INCH DIAMETER, 1/4 INCH THICK. 24. 1/524288 INCH DIAMETER, 1/4 INCH THICK. 25. 1/1048576 INCH DIAMETER, 1/4 INCH THICK. 26. 1/2097152 INCH DIAMETER, 1/4 INCH THICK. 27. 1/4194304 INCH DIAMETER, 1/4 INCH THICK. 28. 1/8388608 INCH DIAMETER, 1/4 INCH THICK. 29. 1/16777216 INCH DIAMETER, 1/4 INCH THICK. 30. 1/33554432 INCH DIAMETER, 1/4 INCH THICK. 31. 1/67108864 INCH DIAMETER, 1/4 INCH THICK. 32. 1/134217728 INCH DIAMETER, 1/4 INCH THICK. 33. 1/268435456 INCH DIAMETER, 1/4 INCH THICK. 34. 1/536870912 INCH DIAMETER, 1/4 INCH THICK. 35. 1/1073741824 INCH DIAMETER, 1/4 INCH THICK. 36. 1/2147483648 INCH DIAMETER, 1/4 INCH THICK. 37. 1/4294967296 INCH DIAMETER, 1/4 INCH THICK. 38. 1/8589934592 INCH DIAMETER, 1/4 INCH THICK. 39. 1/17179869184 INCH DIAMETER, 1/4 INCH THICK. 40. 1/34359738368 INCH DIAMETER, 1/4 INCH THICK. 41. 1/68719476736 INCH DIAMETER, 1/4 INCH THICK. 42. 1/137438953472 INCH DIAMETER, 1/4 INCH THICK. 43. 1/274877906944 INCH DIAMETER, 1/4 INCH THICK. 44. 1/549755813888 INCH DIAMETER, 1/4 INCH THICK. 45. 1/1099511627776 INCH DIAMETER, 1/4 INCH THICK. 46. 1/2199023255552 INCH DIAMETER, 1/4 INCH THICK. 47. 1/4398046511104 INCH DIAMETER, 1/4 INCH THICK. 48. 1/8796093022208 INCH DIAMETER, 1/4 INCH THICK. 49. 1/17592186044416 INCH DIAMETER, 1/4 INCH THICK. 50. 1/35184372088832 INCH DIAMETER, 1/4 INCH THICK. 51. 1/70368744177664 INCH DIAMETER, 1/4 INCH THICK. 52. 1/140737488355328 INCH DIAMETER, 1/4 INCH THICK. 53. 1/281474976710656 INCH DIAMETER, 1/4 INCH THICK. 54. 1/562949953421312 INCH DIAMETER, 1/4 INCH THICK. 55. 1/1125899906842624 INCH DIAMETER, 1/4 INCH THICK. 56. 1/2251799813685248 INCH DIAMETER, 1/4 INCH THICK. 57. 1/4503599627370496 INCH DIAMETER, 1/4 INCH THICK. 58. 1/9007199254740992 INCH DIAMETER, 1/4 INCH THICK. 59. 1/18014398509481984 INCH DIAMETER, 1/4 INCH THICK. 60. 1/36028797018963968 INCH DIAMETER, 1/4 INCH THICK. 61. 1/72057594037927936 INCH DIAMETER, 1/4 INCH THICK. 62. 1/144115188075855872 INCH DIAMETER, 1/4 INCH THICK. 63. 1/288230376151711744 INCH DIAMETER, 1/4 INCH THICK. 64. 1/576460752303423488 INCH DIAMETER, 1/4 INCH THICK. 65. 1/1152921504606846976 INCH DIAMETER, 1/4 INCH THICK. 66. 1/2305843009213693952 INCH DIAMETER, 1/4 INCH THICK. 67. 1/4611686018427387904 INCH DIAMETER, 1/4 INCH THICK. 68. 1/9223372036854775808 INCH DIAMETER, 1/4 INCH THICK. 69. 1/18446744073709551616 INCH DIAMETER, 1/4 INCH THICK. 70. 1/36893488147419103232 INCH DIAMETER, 1/4 INCH THICK. 71. 1/73786976294838206464 INCH DIAMETER, 1/4 INCH THICK. 72. 1/147573952589676412928 INCH DIAMETER, 1/4 INCH THICK. 73. 1/295147905179352825856 INCH DIAMETER, 1/4 INCH THICK. 74. 1/590295810358705651712 INCH DIAMETER, 1/4 INCH THICK. 75. 1/1180591620717411303424 INCH DIAMETER, 1/4 INCH THICK. 76. 1/2361183241434822606848 INCH DIAMETER, 1/4 INCH THICK. 77. 1/4722366482869645213696 INCH DIAMETER, 1/4 INCH THICK. 78. 1/9444732965739290427392 INCH DIAMETER, 1/4 INCH THICK. 79. 1/18889465931478580854784 INCH DIAMETER, 1/4 INCH THICK. 80. 1/37778931862957161709568 INCH DIAMETER, 1/4 INCH THICK. 81. 1/75557863725914323419136 INCH DIAMETER, 1/4 INCH THICK. 82. 1/151115727451828646838272 INCH DIAMETER, 1/4 INCH THICK. 83. 1/302231454903657293676544 INCH DIAMETER, 1/4 INCH THICK. 84. 1/604462909807314587353088 INCH DIAMETER, 1/4 INCH THICK. 85. 1/1208925819614629174706176 INCH DIAMETER, 1/4 INCH THICK. 86. 1/2417851639229258349412352 INCH DIAMETER, 1/4 INCH THICK. 87. 1/4835703278458516698824704 INCH DIAMETER, 1/4 INCH THICK. 88. 1/9671406556917033397649408 INCH DIAMETER, 1/4 INCH THICK. 89. 1/19342813113834066795298816 INCH DIAMETER, 1/4 INCH THICK. 90. 1/38685626227668133590597632 INCH DIAMETER, 1/4 INCH THICK. 91. 1/77371252455336267181195264 INCH DIAMETER, 1/4 INCH THICK. 92. 1/154742504910672534362390528 INCH DIAMETER, 1/4 INCH THICK. 93. 1/309485009821345068724781056 INCH DIAMETER, 1/4 INCH THICK. 94. 1/618970019642690137449562112 INCH DIAMETER, 1/4 INCH THICK. 95. 1/1237940039285380274899124224 INCH DIAMETER, 1/4 INCH THICK. 96. 1/2475880078570760549798248448 INCH DIAMETER, 1/4 INCH THICK. 97. 1/4951760157141521099596496896 INCH DIAMETER, 1/4 INCH THICK. 98. 1/9903520314283042199192993792 INCH DIAMETER, 1/4 INCH THICK. 99. 1/19807040628566084398385987584 INCH DIAMETER, 1/4 INCH THICK. 100. 1/39614081257132168796771975168 INCH DIAMETER, 1/4 INCH THICK. 101. 1/79228162514264337593543950336 INCH DIAMETER, 1/4 INCH THICK. 102. 1/158456325028528675187087900672 INCH DIAMETER, 1/4 INCH THICK. 103. 1/316912650057057350374175801344 INCH DIAMETER, 1/4 INCH THICK. 104. 1/633825300114114700748351602688 INCH DIAMETER, 1/4 INCH THICK. 105. 1/1267650600228229401496703205376 INCH DIAMETER, 1/4 INCH THICK. 106. 1/2535301200456458802993406410752 INCH DIAMETER, 1/4 INCH THICK. 107. 1/5070602400912917605986812821504 INCH DIAMETER, 1/4 INCH THICK. 108. 1/10141204801825835211973625643008 INCH DIAMETER, 1/4 INCH THICK. 109. 1/20282409603651670423947251286016 INCH DIAMETER, 1/4 INCH THICK. 110. 1/40564819207303340847894502572032 INCH DIAMETER, 1/4 INCH THICK. 111. 1/81129638414606681695789005144064 INCH DIAMETER, 1/4 INCH THICK. 112. 1/162259276829213363391578010288128 INCH DIAMETER, 1/4 INCH THICK. 113. 1/324518553658426726783156020576256 INCH DIAMETER, 1/4 INCH THICK. 114. 1/649037107316853453566312041152512 INCH DIAMETER, 1/4 INCH THICK. 115. 1/1298074214633706907132624082305024 INCH DIAMETER, 1/4 INCH THICK. 116. 1/2596148429267413814265248164610048 INCH DIAMETER, 1/4 INCH THICK. 117. 1/5192296858534827628530496329220096 INCH DIAMETER, 1/4 INCH THICK. 118. 1/10384593717069655257060992658440192 INCH DIAMETER, 1/4 INCH THICK. 119. 1/20769187434139310514121985316880384 INCH DIAMETER, 1/4 INCH THICK. 120. 1/41538374868278621028243970633760768 INCH DIAMETER, 1/4 INCH THICK. 121. 1/83076749736557242056487941267521536 INCH DIAMETER, 1/4 INCH THICK. 122. 1/166153499473114484112975882535043072 INCH DIAMETER, 1/4 INCH THICK. 123. 1/332306998946228968225951765070086144 INCH DIAMETER, 1/4 INCH THICK. 124. 1/664613997892457936451903530140172288 INCH DIAMETER, 1/4 INCH THICK. 125. 1/1329227995784915872903807060280344576 INCH DIAMETER, 1/4 INCH THICK. 126. 1/2658455991569831745807614120560689152 INCH DIAMETER, 1/4 INCH THICK. 127. 1/5316911983139663491615228241121378304 INCH DIAMETER, 1/4 INCH THICK. 128. 1/10633823966279326983230456482242756608 INCH DIAMETER, 1/4 INCH THICK. 129. 1/21267647932558653966460912964485513216 INCH DIAMETER, 1/4 INCH THICK. 130. 1/42535295865117307932921825928971026432 INCH DIAMETER, 1/4 INCH THICK. 131. 1/85070591730234615865843651857942052864 INCH DIAMETER, 1/4 INCH THICK. 132. 1/170141183460469231731687303715884105728 INCH DIAMETER, 1/4 INCH THICK. 133. 1/340282366920938463463374607431768211456 INCH DIAMETER, 1/4 INCH THICK. 134. 1/680564733841876926926749214863536422912 INCH DIAMETER, 1/4 INCH THICK. 135. 1/1361129467683753853853498429727072845824 INCH DIAMETER, 1/4 INCH THICK. 136. 1/2722258935367507707706996859454145691648 INCH DIAMETER, 1/4 INCH THICK. 137. 1/5444517870735015415413993718908291383296 INCH DIAMETER, 1/4 INCH THICK. 138. 1/10889035741470030830827987437816582766592 INCH DIAMETER, 1/4 INCH THICK. 139. 1/21778071482940061661655974875633165533184 INCH DIAMETER, 1/4 INCH THICK. 140. 1/43556142965880123323311949751266331066368 INCH DIAMETER, 1/4 INCH THICK. 141. 1/87112285931760246646623899502532662132736 INCH DIAMETER, 1/4 INCH THICK. 142. 1/174224571863520493293247799005065324265472 INCH DIAMETER, 1/4 INCH THICK. 143. 1/348449143727040986586495598010130648530944 INCH DIAMETER, 1/4 INCH THICK. 144. 1/696898287454081973172991196020261297061888 INCH DIAMETER, 1/4 INCH THICK. 145. 1/1393796574908163946345982392040522594123776 INCH DIAMETER, 1/4 INCH THICK. 146. 1/2787593149816327892691964784081045188247552 INCH DIAMETER, 1/4 INCH THICK. 147. 1/5575186299632655785383929568162090376495104 INCH DIAMETER, 1/4 INCH THICK. 148. 1/11150372599265311570767859136324180752990208 INCH DIAMETER, 1/4 INCH THICK. 149. 1/22300745198530623141535718272648361505980416 INCH DIAMETER, 1/4 INCH THICK. 150. 1/44601490397061246283071436545296723011960832 INCH DIAMETER, 1/4 INCH THICK. 151. 1/89202980794122492566142873090593446023921664 INCH DIAMETER, 1/4 INCH THICK. 152. 1/178405961588244985132285746181186892047843328 INCH DIAMETER, 1/4 INCH THICK. 153. 1/356811923176489970264571492362373784095686656 INCH DIAMETER, 1/4 INCH THICK. 154. 1/713623846352979940529142984724747568191373312 INCH DIAMETER, 1/4 INCH THICK. 155. 1/1427247692705959881058285969449495136382746624 INCH DIAMETER, 1/4 INCH THICK. 156. 1/2854495385411919762116571938898990272765493248 INCH DIAMETER, 1/4 INCH THICK. 157. 1/5708990770823839524233143877797980545530986496 INCH DIAMETER, 1/4 INCH THICK. 158. 1/11417981541647679048466287755595961091061972992 INCH DIAMETER, 1/4 INCH THICK. 159. 1/22835963083295358096932575511191922182123945984 INCH DIAMETER, 1/4 INCH THICK. 160. 1/45671926166590716193865151022383844364247891968 INCH DIAMETER, 1/4 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183. 1/383123885216472214589586756787577295904684780545900544 INCH DIAMETER, 1/4 INCH THICK. 184. 1/766247770432944429179173513575154591809369561091801088 INCH DIAMETER, 1/4 INCH THICK. 185. 1/1532495540865888858358347027150309183618739122183602176 INCH DIAMETER, 1/4 INCH THICK. 186. 1/3064991081731777716716694054300618367237478244367204352 INCH DIAMETER, 1/4 INCH THICK. 187. 1/6129982163463555433433388108601236734474956488734408704 INCH DIAMETER, 1/4 INCH THICK. 188. 1/12259964326927110866866776217202473468949912977468817408 INCH DIAMETER, 1/4 INCH THICK. 189. 1/24519928653854221733733552434404946937899825954937634816 INCH DIAMETER, 1/4 INCH THICK. 190. 1/49039857307708443467467104868809893875799651909875269632 INCH DIAMETER, 1/4 INCH THICK. 191. 1/98079714615416886934934209737619787751599303819750539264 INCH DIAMETER, 1/4 INCH THICK. 192. 1/196159429230833773869868419475239575503198607639501078528 INCH DIAMETER, 1/4 INCH THICK. 193. 1/392318858461667547739736838950479151006397215279002157056 INCH DIAMETER, 1/4 INCH THICK. 194. 1/784637716923335095479473677900958302012794430558004314112 INCH DIAMETER, 1/4 INCH THICK. 195. 1/1569275433846670190958947355801916604025588861116008628224 INCH DIAMETER, 1/4 INCH THICK. 196. 1/3138550867693340381917894711603833208051177722232017256448 INCH DIAMETER, 1/4 INCH THICK. 197. 1/6277101735386680763835789423207666416102355444464034512896 INCH DIAMETER, 1/4 INCH THICK. 198. 1/12554203470773361527671578846415332832204710888928069025792 INCH DIAMETER, 1/4 INCH THICK. 199. 1/25108406941546723055343157692830665664409421777856138051584 INCH DIAMETER, 1/4 INCH THICK. 200. 1/50216813883093446110686315385661331328818843555712276103168 INCH DIAMETER, 1/4 INCH THICK. 201. 1/100433627766186892221372630771322662657637687111424552206336 INCH DIAMETER, 1/4 INCH THICK. 202. 1/200867255532373784442745261542645325315275374222849104412672 INCH DIAMETER, 1/4 INCH THICK. 203. 1/401734511064747568885490523085290650630550748445698208825344 INCH DIAMETER, 1/4 INCH THICK. 204. 1/803469022129495137770981046170581301261101496891396417650688 INCH DIAMETER, 1/4 INCH THICK. 205. 1/1606938044258990275541962092341162602522202993782792835301376 INCH DIAMETER, 1/4 INCH THICK. 206. 1/3213876088517980551083924184682325205044405987565585670602752 INCH DIAMETER, 1/4 INCH THICK. 207. 1/6427752177035961102167848369364650410088811975131171341205504 INCH DIAMETER, 1/4 INCH THICK. 208. 1/12855504354071922204335696738729300820177623950262342682411008 INCH DIAMETER, 1/4 INCH THICK. 209. 1/25711008708143844408671393477458601640355247900524685364822016 INCH DIAMETER, 1/4 INCH THICK. 210. 1/51422017416287688817342786954917203280710495801049370729644032 INCH DIAMETER, 1/4 INCH THICK. 211. 1/102844034832575377634685573909834406561420991602098741459288064 INCH DIAMETER, 1/4 INCH THICK. 212. 1/205688069665150755269371147819668813122841983204197482918576128 INCH DIAMETER, 1/4 INCH THICK. 213. 1/411376139330301510538742295639337626245683966408394965837152256 INCH DIAMETER, 1/4 INCH THICK. 214. 1/822752278660603021077484591278675252491367932816789931674304512 INCH DIAMETER, 1/4 INCH THICK. 215. 1/1645504557321206042154969182557350504982735865633579863348609024 INCH DIAMETER, 1/4 INCH THICK. 216. 1/3291009114642412084309938365114701009965471731267159726697218048 INCH DIAMETER, 1/4 INCH THICK. 217. 1/6582018229284824168619876730229402019930943462534319453394436096 INCH DIAMETER, 1/4 INCH THICK. 218. 1/13164036458569648337239753460458804039861886925068638906788872192 INCH DIAMETER, 1/4 INCH THICK. 219. 1/26328072917139296674479506920917608079723773850137277813577744384 INCH DIAMETER, 1/4 INCH THICK. 220. 1/52656145834278593348959013841835216159447547700274555627155488768 INCH DIAMETER, 1/4 INCH THICK. 221. 1/10

RESULTS OF SPIRIT LEVELING IN OKLAHOMA, 1895 TO 1912, INCLUSIVE.

R. B. MARSHALL, Chief Geographer.

INTRODUCTION.

Cooperation.—The Territory of Oklahoma contributed financially to the work of 1905 to 1907 inclusive through the Territorial Survey Commission, and the State of Oklahoma contributed financially to the work of 1908, 1911, and 1912, through the State Geological Survey, of which Charles N. Gould was director from 1908 to 1911 inclusive and D. W. Ohern was director in 1912.

Previous publication.—The results of spirit leveling previously published in Bulletin 175, containing descriptions and elevations of bench marks established in the former Indian Territory, 1895 to 1898, inclusive, and based on the unadjusted elevation (446.29 feet) of Coast and Geodetic Survey bench mark XLI at Fort Smith, Ark., have been corrected to agree with the 1912 adjustment of precise leveling of the Coast and Geodetic Survey and are here republished, pages 8 to 56, inclusive, together with all results of spirit leveling in Oklahoma by the United States Geological Survey since 1898. The elevations are likely to be changed only slightly by any future adjustment.

Personnel.—The field work from 1895 to 1898 inclusive was done under C. H. Fitch, topographer; that for 1899 to 1906 inclusive under E. M. Douglas, geographer; that for 1907 to 1909 inclusive under E. C. Barnard, geographer; and that for later years under Sledge Tatum, geographer, under the general direction of R. B. Marshall, chief geographer.

Classification.—No precise leveling has been done by the United States Geological Survey in this State. For primary lines standard **Y levels** are used; lines are run in circuits or are closed on precise lines, with an allowable closing error in feet represented by $0.05 \sqrt{D}$, in which D is the length of the circuit in miles, sufficient care being given the work to maintain this standard. For circuit closures careful office adjustments are made, the small outstanding errors being distributed over the lines.

Bench marks.—The standard bench marks are of two forms. The first form is a circular bronze or aluminum tablet (*C* and *E*, *P*, *V*),

3½ inches in diameter and one-fourth inch thick, having a 3-inch stem, which is cemented in a drill hole in solid rock in the wall of some public building, a bridge abutment, or other substantial masonry structure. The second form (*F*, Pl. I), used where masonry or rock is not available, consists of a hollow wrought-iron post 3½ inches in outer diameter and 4 feet in length. It is split at the bottom and expanded to a width of 10 inches in order to give a firm bearing on the earth and is set about 3 feet in the ground. A bronze or aluminum-bronze cap is riveted upon the top of the post. A third style of bench mark with abbreviated lettering (*B* and *D*, Pl. I), is used for unimportant points. This consists of a special copper nail, 1½ inches in length, driven through a copper washer seven-eighths of an inch in diameter.

The tablets, as well as the caps on the iron posts, are appropriately lettered, and State cooperation is indicated by the addition of the State name (*G*, Pl. I).

The numbers stamped on the bench marks described in the following pages represent the elevations to the nearest foot, as determined by the levelman. These numbers are stamped with $\frac{1}{8}$ -inch steel dies on the tablets or post caps, to the left of the word "feet." The office adjustment of the notes and the reduction to mean sea level datum may so change some of the figures that the original markings are 1 or 2 feet in error. It is assumed that engineers and others who have occasion to use the bench-mark elevations will apply to the Director of the United States Geological Survey at Washington, D. C., for the adjusted values, and will use the markings as identification numbers only.

Datum.—All United States Geological Survey elevations are referred to mean sea level, which is the level that the sea would assume if the influence of tides and winds were eliminated. This level is not the elevation determined from the mean of the highest and the lowest tides, nor is it the half sum of the mean of all the high tides and the mean of all the low tides, which is called the half-tide level. *Mean sea level is the average height of the water, all stages of the tide being considered.* It is determined from observations made by means of tidal gages placed at stations where local conditions, such as long narrow bays, rivers, and like features will not affect the height of the water. To obtain even approximately correct results these observations must extend over at least one lunar month, and if accuracy is desired they must extend over several years. At ocean stations the half-tide level and the mean sea level usually differ but little. It is assumed that there is no difference between the mean sea level as determined from observations in the Atlantic Ocean, the Gulf of Mexico, and the Pacific Ocean.

The connection with tidal stations for bench marks in certain areas that lie at some distance from the seacoast is still uncertain, and this fact is indicated by the addition of a letter or word to the right of the word "Datum" on tablets or posts. For such areas corrections of published results will be made from time to time as the precise-level lines of the United States Geological Survey or other Government organizations are extended.

Topographic maps.—Maps of the following quadrangles, wholly or partly in Oklahoma, have been published by the United States Geological Survey up to December 6, 1913. They may be obtained (except as noted) for 10 cents each, or \$3 for 50, on application to the Director of the Survey at Washington, D. C.:

| | |
|---------------------------------------|---------------------------------|
| Addington (Ind. T.). ¹ | Montague (Tex.-Ind. T.). |
| Agra. | Muskogee (Ind. T.). |
| Alikchi (Ind. T.). | Nowata (Ind. T.). |
| Antlers (Ind. T.). | Nuyaka (Ind. T.). |
| Ardmore (Ind. T.). | Oklmulgee (Ind. T.). |
| Atoka (Ind. T.). | Pauls Valley (Ind. T.). |
| Canadian (Ind. T.). | Pawhuska. |
| Chandler. | Perkins. |
| Chickasha (Ind. T.-Okla.). | Poteau Mountain (Ark.-Ind. T.). |
| Claremore (Ind. T.). | Pryor (Ind. T.). |
| Coalgate (Ind. T.). | Rush Springs (Ind. T.). |
| Denison (Tex.-Ind. T.). | Sallisaw (Ind. T.). |
| Dequeen (Ark.-Okla.). | Sansbois (Ind. T.). |
| Fort Smith (Ark.-Ind. T.). | Shawnee. |
| Gainesville (Tex.-Ind. T.). | Siloam Springs (Ind. T.-Ark.) |
| Indian Territory contour map, 20 cts. | Stonewall (Ind. T.). |
| Joplin (Kans.-Mo.-Ind. T.). | Tablequah (Ind. T.-Ark.). |
| Joplin district (Mo.-Kans.-Okla.), | Tishomingo (Ind. T.). |
| double sheet, 20 cts. | Tuskahoma. |
| Kingfisher. | Vinita (Ind. T.). |
| Lukfata (Ind. T.). | Wewoka (Ind. T.). |
| Luther. | Winding Stair. |
| McAlester. | Winslow (Ark.-Ind. T.). |
| McComb. | Wyandotte (Okla.-Mo.-Kans.) |
| Maud. | |

PRIMARY LEVELING.

Wyandotte Quadrangle.

[Latitude 36° 30'–37°; longitude 94° 30'–95°.]

DELAWARE AND OTTAWA COUNTIES.

A. F. Hassan ran the railroad levels; George Nick, W. E. Earle, and H. L. Muldrow, jr., did the leveling along township and section lines.

¹“(Ind. T.)” refers to present heading of published sheets.

From Afton along St. Louis & San Francisco R. R. to the Missouri-Oklahoma boundary line.

| | Feet. |
|--|---------|
| Afton, 0.2 mile north of, in coping stone on south side of west abutment of bridge 245, over Horse Creek; copper bolt..... | 778.537 |
| Wyandotte, 2 miles south of, in south coping stone of west abutment of bridge over Grand River; copper bolt..... | 747.868 |
| Wyandotte, 5 miles north of, in stone on south side of west pier of bridge 222, over Lees Creek; copper bolt..... | 819.227 |
| Missouri-Oklahoma boundary line, 10 feet north of track and 4 feet south of "State Line" signboard; iron post..... | 851.321 |

Along township and section lines.¹

| | |
|---|-----------|
| T. 28 N., Rs. 21 and 22 E., closing corner of; iron post..... | 776.834 |
| Grand River meander corner between sec. 6, T. 28 N., R. 22 E., and sec. 31, T. 29 N., R. 21 E.; iron post on right bank of river..... | 777.610 |
| Grand River meander corner between sec. 6, T. 27 N., R. 23 E., and sec. 31, T. 28 N., R. 23 E.; iron post on right bank of river..... | 744.441 |
| Tps. 27 and 28 N., Rs. 22 and 23 E., corner of; iron post..... | 775.993 |
| Tps. 27 and 28 N., Rs. 21 and 22 E., corner of; iron post..... | 811.795 |
| Tps. 26 and 27 N., Rs. 21 and 22 E., corner of; iron post..... | 767.492 |
| Tps. 26 and 27 N., Rs. 22 and 23 E., corner of; iron post..... | 798.342 |
| Grand River meander corner between sec. 36, T. 27 N., R. 23 E., and sec. 1, T. 26 N., R. 23 E.; iron post on right bank of river..... | 731.784 |
| Grand River meander corner between sec. 32, T. 26 N., R. 24 E., and sec. 5, T. 25 N., R. 24 E.; iron post on right bank of river..... | 706.101 |
| Tps. 25 and 26 N., Rs. 23 and 24 E., corner of; iron post..... | 740.121 |
| Tps. 25 and 26 N., Rs. 22 and 23 E., corner of; iron post..... | 854.281 |
| Tps. 25 and 26 N., Rs. 21 and 22 E., corner of; iron post..... | 783.431 |
| T. 25 N., Rs. 21 and 22 E., standard corner of; iron post..... | 839.243 |
| T. 24 N., Rs. 22 and 23 E., closing corner of; iron post..... | 702.571 |
| T. 25 N., Rs. 22 and 23 E., standard corner of; iron post..... | 739.011 |
| T. 24 N., Rs. 23 and 24 E., closing corner of; iron post..... | 758.979 |
| T. 25 N., Rs. 23 and 24 E., standard corner of; iron post..... | 755.009 |
| T. 24 N., Rs. 24 and 25 E., closing corner of; iron post..... | 881.663 |
| T. 25 N., Rs. 24 and 25 E., standard corner of; iron post..... | 880.193 |
| Missouri-Oklahoma boundary line, closing corner Tps. 24 and 25 N., R. 25 E.; iron post..... | 908.013 |
| Seneca-Cherokee boundary line, closing corner T. 25 N., Rs. 23 and 24 E.; iron post..... | 776.499 |
| Seneca-Cherokee boundary line, closing corner T. 25 N., Rs. 24 and 25 E.; iron post..... | 837.103 |
| Seneca-Cherokee boundary line, intersection with west boundary line of Missouri, T. 25 N., R. 25 E., of Indian Territory Survey; iron post..... | 755.733 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 23 and 24 N., R. 25 E.; iron post..... | 1,034.393 |
| Tps. 23 and 24 N., Rs. 24 and 25 E., corner of; iron post..... | 1,033.603 |
| Tps. 23 and 24 N., Rs. 23 and 24 E., corner of; iron post..... | 904.573 |
| Tps. 23 and 24 N., Rs. 22 and 23 E., corner of; iron post..... | 898.403 |

¹ Figures adjusted with reference to work done in 1906 in the Joplin district, Mo.

Vinita Quadrangle.

[Latitude 36° 30'–37° ; longitude 95°–95° 30'.]

CRAIG COUNTY.

The railroad levels were run by Robert Coe, C. B. Odell, and A. F. Hassan. C. B. Odell, E. W. Hill, W. E. Earle, and A. F. Hassan did the leveling along township and section lines.

From Big Cabin along Missouri, Kansas & Texas Ry. to Kansas-Oklahoma boundary line.

| | Feet. |
|--|----------|
| Big Cabin, 3.75 miles north of, east side of north abutment of bridge 227 over Whiteoak Creek, near mile pole 443, in angle coping stone; copper bolt----- | 671. 632 |
| Vinita, in northwest angle of Missouri, Kansas & Texas and St. Louis & San Francisco railroads, 13.8 feet west of the Missouri, Kansas & Texas track, and 22.9 feet north of the St. Louis & San Francisco track, 4.2 feet north of a telegraph pole; iron post----- | 699. 616 |
| Vinita, in second stone from north end of second course of foundation stone above sidewalk of Hotel Cobb, a brick building owned by S. S. Cobb; bronze tablet----- | 706. 809 |
| Kelso, 0.8 mile north of, in bottom stone of east side of south abutment of bridge 220, 160 feet north of mile pole 433; copper bolt---- | 753. 398 |
| Bluejacket, between main track and "house track," south of station building, 22.9 feet from west rail of main track, 21.5 feet from east rail of house track, and 42.4 feet from south end of building; square hole cut in sandstone post, 4 by 13 inches, surface flush with ground----- | 777. 965 |
| Bluejacket, 2 miles north of, 0.25 mile north of mile pole 425, on west side of south abutment of bridge 217, 8 inches from west edge of seat stone; copper bolt----- | 766. 022 |
| Russell Creek, 2 miles north of, in first step on east side of north abutment of bridge 213, 1,400 feet north of mile pole 414; copper bolt----- | 802. 816 |
| Kansas-Oklahoma boundary line, intersection of railroad with, in sandstone post 14 by 14 by 5 inches, flush with ground, 49.6 feet from west rail of track and referenced by three posts situated as follows: 3.4 feet northwest, 2.5 feet east, and 4 feet southwest from stone; square hole----- | 839. 896 |

From Chelsea along St. Louis & San Francisco R. R. to Albia.

| | |
|--|----------|
| Chelsea, in sandstone post 8 by 10 by 22 inches, buried flush with ground, 11.5 feet from northwest corner of station building and 15.6 feet from east rail of track; copper bolt----- | 719. 547 |
| Chelsea, in northeast corner of stone bank building at Olive and Fifth Streets; bronze tablet----- | 722. 351 |
| Vinita, 1 mile west of, in southwest coping stone of south abutment of bridge over Big Cabin Creek; copper bolt----- | 680. 491 |

Along township lines.

| | Feet. |
|--|---------|
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 17 and 18 E.; iron post----- | 905.345 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 18 and 19 E.; iron post----- | 939.223 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 19 and 20 E.; iron post----- | 909.785 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 20 and 21 E.; iron post----- | 831.574 |
| Kansas-Oklahoma boundary line, beside the "Zero" milepost and 400 feet west of the Neosho or Grand River; iron post----- | 784.579 |
| T. 29 N., Rs. 20 and 21 E., standard corner of; iron post----- | 837.500 |
| T. 28 N., Rs. 20 and 21 E., closing corner of; iron post----- | 892.353 |
| T. 29 N., Rs. 19 and 20 E., standard corner of; iron post----- | 950.341 |
| T. 28 N., Rs. 19 and 20 E., closing corner of; iron post----- | 899.543 |
| T. 29 N., Rs. 18 and 19 E., standard corner of; iron post----- | 961.686 |
| T. 28 N., Rs. 18 and 19 E., closing corner of; iron post----- | 899.426 |
| T. 29 N., Rs. 17 and 18 E., standard corner of; iron post----- | 831.686 |
| T. 28 N., Rs. 17 and 18 E., closing corner of; iron post----- | 849.686 |
| Tps. 27 and 28 N., Rs. 17 and 18 E., corner of; iron post----- | 807.640 |
| Tps. 27 and 28 N., Rs. 18 and 19 E., corner of; iron post----- | 823.426 |
| Tps. 27 and 28 N., Rs. 19 and 20 E., corner of; iron post----- | 960.590 |
| Tps. 27 and 28 N., Rs. 20 and 21 E., corner of; iron post----- | 795.640 |
| Tps. 26 and 27 N., Rs. 20 and 21 E., corner of; iron post----- | 776.550 |
| Tps. 26 and 27 N., Rs. 19 and 20 E., corner of; iron post----- | 760.481 |
| Tps. 26 and 27 N., Rs. 18 and 19 E., corner of; iron post----- | 831.782 |
| Tps. 26 and 27 N., Rs. 17 and 18 E., corner of; iron post----- | 781.550 |
| Tps. 25 and 26 N., Rs. 17 and 18 E., corner of; iron post----- | 737.860 |
| Tps. 25 and 26 N., Rs. 18 and 19 E., corner of; iron post----- | 798.887 |
| Tps. 25 and 26 N., Rs. 19 and 20 E., corner of; iron post----- | 722.841 |
| Tps. 25 and 26 N., Rs. 20 and 21 E., corner of; iron post----- | 743.871 |
| T. 24 N., Rs. 21 and 22 E., closing corner of; iron post----- | 823.583 |
| T. 25 N., Rs. 20 and 21 E., standard corner of; iron post----- | 677.606 |
| T. 24 N., Rs. 20 and 21 E., closing corner of; iron post----- | 720.663 |
| T. 25 N., Rs. 19 and 20 E., standard corner of; iron post----- | 690.976 |
| T. 24 N., Rs. 19 and 20 E., closing corner of; iron post----- | 701.317 |
| T. 25 N., Rs. 18 and 19 E., standard corner of; iron post----- | 913.550 |
| T. 24 N., Rs. 18 and 19 E., closing corner of; iron post----- | 900.438 |
| T. 25 N., Rs. 17 and 18 E., standard corner of; iron post----- | 790.416 |
| Tps. 23 and 24 N., Rs. 17 and 18 E., corner of; iron post----- | 714.251 |
| Tps. 23 and 24 N., Rs. 18 and 19 E., corner of; iron post----- | 844.677 |
| Tps. 23 and 24 N., Rs. 19 and 20 E., corner of; iron post----- | 686.819 |
| Tps. 23 and 24 N., Rs. 20 and 21 E., witness corner to; iron post----- | 661.117 |
| Tps. 23 and 24 N., Rs. 21 and 22 E., corner of; iron post. (This bench mark is just north of Vinita quadrangle on Missouri, Kansas & Texas Ry.)----- | 824.513 |

Nowata Quadrangle.

[Latitude 36° 30'-37°; longitude 95° 30'-96°.]

NOWATA AND WASHINGTON COUNTIES.

C. B. Odell ran the railroad levels; W. S. D. Moore, G. Nick, J. P. Thayer, and A. F. Hassan did the leveling along township and section lines.

From Talala along St. Louis, Iron Mountain & Southern Ry. to Seminole.

| | Feet. |
|--|---------|
| Talala, in sandstone post 7 by 9 by 18 inches, buried flush with ground, 8.6 feet from southeast corner of station building; copper bolt..... | 685.805 |
| Nowata, in sandstone post 8 by 8 by 26 inches, buried flush with ground, 8.7 feet south from southeast corner of station building, 14 feet from track; copper bolt..... | 696.000 |
| Nowata, in sandstone sill, northeast corner of J. H. Bartlett's "City Dry Goods Store"; bronze tablet..... | 704.919 |
| Nowata, 3 miles north of, in second capstone from east end of center pier bridge over California Creek; square hole..... | 663.291 |
| Seminole, 4 miles north of, in sandstone post 6 by 8 by 24 inches, buried flush with ground, 8.8 feet west of track and 1.4 feet from post marking intersection of railroad and Kansas-Oklahoma boundary line, which is near thirty-fourth milepost of boundary line; copper bolt..... | 733.004 |

Along township and section lines.

| | |
|--|---------|
| Kansas-Oklahoma boundary line, closing corner Osage-Cherokee boundary line, T. 29 N., R. 12 E.; iron post..... | 944.691 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 12 and 13 E.; iron post..... | 722.186 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 13 and 14 E.; iron post..... | 809.136 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 14 and 15 E.; iron post..... | 875.911 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 15 and 16 E.; iron post..... | 737.705 |
| Kansas-Oklahoma boundary line, closing corner T. 29 N., Rs. 16 and 17 E.; iron post..... | 759.705 |
| T. 29 N., Rs. 16 and 17 E., standard corner of; iron post..... | 810.936 |
| T. 28 N., Rs. 16 and 17 E., closing corner of; iron post..... | 739.936 |
| T. 29 N., Rs. 15 and 16 E., standard corner of; iron post..... | 716.154 |
| T. 28 N., Rs. 15 and 16 E., closing corner of; iron post..... | 761.137 |
| T. 29 N., Rs. 14 and 15 E., standard corner of; iron post..... | 949.196 |
| T. 28 N., Rs. 14 and 15 E., closing corner of; iron post..... | 922.979 |
| T. 29 N., Rs. 13 and 14 E., standard corner of; iron post..... | 784.176 |
| T. 28 N., Rs. 13 and 14 E., closing corner of; iron post..... | 743.266 |
| T. 29 N., Rs. 12 and 13 E., standard corner of; iron post..... | 707.136 |
| T. 28 N., Rs. 12 and 13 E., closing corner of; iron post..... | 744.429 |
| Osage-Cherokee boundary line, Tps. 28 and 29 N., R. 12 E., closing corner of; iron post..... | 796.146 |
| Osage-Cherokee boundary line, Tps. 27 and 28 N., R. 12 E., closing corner of; iron post..... | 695.122 |
| Tps. 27 and 28 N., Rs. 12 and 13 E., corner of; iron post..... | 690.461 |
| Tps. 27 and 28 N., Rs. 13 and 14 E., corner of; iron post..... | 801.549 |
| Tps. 27 and 28 N., Rs. 14 and 15 E., corner of; iron post..... | 848.489 |
| Timber Hill triangulation station, northeast part of NW. $\frac{1}{4}$ sec. 5, T. 28 N., R. 15 E., 20 feet left of signal tower; copper bolt in stone..... | 971.557 |
| Tps. 27 and 28 N., Rs. 15 and 16 E., corner of; iron post..... | 798.869 |
| Tps. 27 and 28 N., Rs. 16 and 17 E., corner of; iron post..... | 710.341 |
| Tps. 26 and 27 N., Rs. 16 and 17 E., corner of; iron post..... | 742.337 |

| | Feet. |
|---|----------|
| Tps. 26 and 27 N., Rs. 15 and 16 E., corner of; iron post----- | 691. 224 |
| Tps. 26 and 27 N., Rs. 14 and 15 E., corner of; iron post----- | 898. 167 |
| Tps. 28 and 27 N., Rs. 13 and 14 E., corner of; iron post----- | 816. 317 |
| Tps. 26 and 27 N., Rs. 12 and 13 E., corner of; iron post----- | 671. 111 |
| Osage-Cherokee boundary line, closing corner Tps. 26 and 27 N., R. 12 E.; iron post----- | 676. 597 |
| Osage-Cherokee boundary line, closing corner Tps. 25 and 26 N., R. 12 E.; iron post----- | 926. 586 |
| Tps. 25 and 26 N., Rs. 12 and 13 E., corner of; iron post----- | 658. 118 |
| Tps. 25 and 26 N., Rs. 13 and 14 E., corner of; iron post----- | 720. 426 |
| Tps. 25 and 26 N., Rs. 14 and 15 E., corner of; iron post----- | 768. 682 |
| Nowata triangulation station, south-central part of SW. $\frac{1}{4}$ sec. 33, T. 26 N., R. 15 E., in stone 6 inches square; copper bolt----- | 904. 857 |
| Tps. 25 and 26 N., Rs. 15 and 16 E., corner of; iron post----- | 692. 902 |
| Tps. 25 and 26 N., Rs. 16 and 17 E., corner of; iron post----- | 643. 710 |
| T. 25 N., Rs. 16 and 17 E., standard corner of; iron post----- | 650. 830 |
| T. 24 N., Rs. 16 and 17 E., closing corner of; iron post----- | 689. 062 |
| T. 25 N., Rs. 15 and 16 E., standard corner of; iron post----- | 697. 985 |
| T. 24 N., Rs. 15 and 16 E., closing corner of; iron post----- | 687. 90 |
| T. 25 N., Rs. 14 and 15 E., standard corner of; iron post----- | 818. 72 |
| T. 24 N., Rs. 14 and 15 E., closing corner of; iron post----- | 810. 58 |
| T. 25 N., Rs. 13 and 14 E., standard corner of; iron post----- | 629. 305 |
| T. 24 N., Rs. 13 and 14 E., closing corner of; iron post----- | 630. 605 |
| T. 25 N., Rs. 12 and 13 E., standard corner of; iron post----- | 737. 278 |
| T. 24 N., Rs. 12 and 13 E., closing corner of; iron post----- | 735. 468 |
| Osage-Cherokee boundary line, closing corner Tps. 24 and 25 N., R. 12 E.; iron post----- | 844. 288 |
| Osage-Cherokee boundary line, closing corner Tps. 23 and 24 N., R. 12 E.; iron post----- | 882. 165 |
| Tps. 23 and 24 N., Rs. 12 and 13 E., corner of; iron post----- | 792. 533 |
| Tps. 23 and 24 N., Rs. 13 and 14 E., corner of; iron post----- | 615. 923 |
| Tps. 23 and 24 N., Rs. 14 and 15 E., corner of; iron post----- | 696. 817 |
| Tps. 23 and 24 N., Rs. 15 and 16 E., corner of; iron post----- | 766. 326 |
| Tps. 23 and 24 N., Rs. 16 and 17 E., corner of; iron post----- | 753. 849 |

Claremore Quadrangle.

[Latitude 36°-36° 30'; longitude 95° 30'-96°.]

ROGERS, TULSA, AND WAGONER COUNTIES.

C. B. Odell ran the railroad levels. W. S. D. Moore, C. B. Odell, A. F. Hassan, and J. P. Thayer did the leveling along township and section lines.

From Inola along St. Louis, Iron Mountain & Southern Ry. to Oologah.

| | Feet. |
|---|----------|
| Inola, in sandstone post, 4 by 6 by 24 inches, buried flush with surface, 10.2 feet from southeast corner of station building; copper bolt----- | 602. 821 |
| Claremore, in top course of foundation stone, at southwest corner of First National Bank building, on northeast corner of Third Street and Wichita Avenue; bronze tablet----- | 602. 077 |

| | Feet. |
|--|----------|
| Claremore, in sandstone post 8 by 8 by 18 inches, 9.1 feet south from southeast corner of station building, 12.6 feet west of St. Louis, Iron Mountain & Southern track; copper bolt..... | 610. 01 |
| Claremore, 1 mile north of, in sandstone post 6 by 9 by 20 inches, flush with surface, 7.8 feet east of St. Louis, Iron Mountain & Southern Ry., 7.8 feet west of St. Louis & San Francisco R. R. tracks, 27.6 feet north of the intersection of these roads; copper bolt..... | 614. 164 |
| Sageeyah, on sandstone post 9 by 9 by 18 inches, 10 feet west of track and 12 feet south from southeast corner of station building; cross..... | 646. 515 |
| Sageeyah, 1 mile north of, near center of bridge structure over Verdigris River; "U. S. B. M." stamped in southeast iron tube..... | 595. 489 |
| Oologah, in stone 7 by 9 by 17 inches, 10.7 feet from south end of station and 12 feet from track, and buried flush with surface; copper bolt..... | 657. 614 |

From Claremore along St. Louis & San Francisco R. R. to Tulsa.

| | |
|--|----------|
| Claremore, St. Louis & San Francisco R. R. station, in sandstone post 8 by 8 by 20 inches, 10.4 feet from northwest corner of building, 18.7 feet east of track, buried flush with surface; copper bolt..... | 601. 687 |
| Catoosa, 1 mile north of, in capstone on south side of east pier, bridge over Verdigris River; copper bolt..... | 573. 724 |
| Tulsa, 6 miles north of, in first capstone on south end of east abutment, bridge over Mingo Creek; square hole..... | 604. 568 |
| Tulsa, in sandstone post 8 by 8 by 22 inches, 18.6 feet west of track, 12.7 feet from southeast corner of station, buried flush with surface; copper bolt..... | 698. 127 |
| Tulsa, in southwest corner stone of second course above sidewalk of stone building known as the Lynch Building; bronze tablet..... | 711. 045 |
| Tulsa, 0.5 mile south of, in west side of north pier, bridge over Arkansas River; copper bolt..... | 643. 95 |

Along township lines.

| | |
|---|----------|
| Tps. 22 and 23 N., Ra. 16 and 17 E., corner of; iron post..... | 789. 19 |
| Tps. 22 and 23 N., Ra. 15 and 16 E., corner of; iron post..... | 620. 23 |
| Tps. 22 and 23 N., Ra. 14 and 15 E., corner of; iron post..... | 666. 665 |
| Tps. 22 and 23 N., Ra. 13 and 14 E., corner of; iron post..... | 629. 285 |
| Tps. 22 and 23 N., Ra. 12 and 13 E., corner of; iron post..... | 665. 745 |
| Oklahoma-Cherokee boundary line, closing corner Tps. 22 and 23 N., R. 12 E., iron post..... | 647. 305 |
| Tps. 21 and 22 N., Ra. 16 and 17 E., corner of; iron post..... | 662. 045 |
| Tps. 21 and 22 N., Ra. 15 and 16 E., corner of; iron post..... | 625. 6 |
| Tps. 21 and 22 N., Ra. 14 and 15 E., corner of; iron post..... | 720. 3 |
| Tps. 21 and 22 N., Ra. 13 and 14 E., corner of; iron post..... | 690. 345 |
| Tps. 21 and 22 N., Ra. 12 and 13 E., corner of; iron post..... | 630. 51 |
| Oklahoma-Cherokee boundary line, closing corner Tps. 21 and 22 N., R. 12 E., iron post..... | 621. 175 |
| Oklahoma-Cherokee boundary line, closing corner Tps. 20 and 21 N., R. 12 E., iron post..... | 749. 34 |
| T. 20 N., Ra. 12 and 18 E., closing corner of; iron post..... | 630. 207 |

| | Feet. |
|---|----------|
| T. 21 N., Rs. 12 and 13 E., standard corner of; iron post..... | 627. 61 |
| T. 20 N., Rs. 13 and 14 E., closing corner of; iron post..... | 582. 08 |
| T. 21 N., Rs. 13 and 14 E., standard corner of; iron post..... | 580. 995 |
| T. 20 N., Rs. 14 and 15 E., closing corner of; iron post..... | 788. 005 |
| T. 21 N., Rs. 14 and 15 E., standard corner of; iron post..... | 797. 135 |
| T. 20 N., Rs. 15 and 16 E., closing corner of; iron post..... | 597. 316 |
| T. 21 N., Rs. 15 and 16 E., standard corner of; iron post..... | 599. 516 |
| T. 20 N., Rs. 16 and 17 E., closing corner of; iron post..... | 606. 427 |
| T. 21 N., Rs. 16 and 17 E., standard corner of; iron post..... | 615. 905 |
| Tps. 19 and 20 N. Rs. 16 and 17 E., corner of; iron post..... | 621. 161 |
| Tps. 19 and 20 N. Rs. 15 and 16 E., corner of; iron post..... | 647. 111 |
| Tps. 19 and 20 N. Rs. 14 and 15 E., corner of; iron post..... | 632. 821 |
| Tps. 19 and 20 N., Rs. 13 and 14 E., corner of; iron post..... | 617. 821 |
| Tps. 19 and 20 N., Rs. 12 and 13 E., witness corner of; iron post.... | 717. 821 |
| Tps. 18 and 19 N., Rs. 12 and 13 E., corner of; iron post..... | 630. 679 |
| Tps. 18 and 19 N., Rs. 13 and 14 E., corner of; iron post..... | 606. 349 |
| Tps. 18 and 19 N., Rs. 14 and 15 E., corner of; iron post..... | 701. 139 |
| Tps. 18 and 19 N., Rs. 15 and 16 E., corner of; iron post..... | 752. 849 |
| Tps. 18 and 19 N., Rs. 16 and 17 E., corner of; iron post..... | 542. 579 |

Pryor Quadrangle.

[Latitude 36°-36° 30'; longitude 95°-95° 30'.]

MOYES COUNTY.

The railroad levels were run by C. B. Odell, A. F. Hassan, and Robert Coe. W. S. D. Moore, A. F. Hassan, E. W. Hill, J. P. Phelan, W. E. Earle, and H. L. Muldrow, jr., did the leveling along township lines.

From Lellaetta along Missouri, Kansas & Texas Ry. to Big Cabin.

| | Feet. |
|--|----------|
| Lellaetta, 2 miles north of, square hole cut in a limestone post, the exposed surface of which is 1.1 feet by 0.45 feet, buried flush with ground between sixth and seventh telegraph poles north of mile-post 482, 50 feet from north telegraph pole, and 27 feet west of track | 583. 084 |
| Choteau; in sandstone post 6 by 10 by 18 inches, buried flush with ground 10 feet west of track and 10.5 feet south of station; square hole | 628. 235 |
| Choteau, 1 mile north of, in coping stone west side of south pier, bridge over Choteau Creek; square hole..... | 588. 294 |
| Pryor Creek, 2 miles south of, in coping stone, northwest corner of north abutment bridge 244, over Pryor Creek; square hole..... | 598. 632 |
| Pryor Creek, in sandstone post 2 by 4 by 24 inches, buried flush with ground near southeast corner of station; U. S. + B. M..... | 628. 236 |
| Pryor Creek, in third course of stone above sidewalk, at south end of general merchandise store occupied by J. L. Baugh; bronze tablet | 633. 976 |
| Perry, 2 miles south of, in second coping stone of east end, south abutment of bridge 237, near mile pole 460; square hole..... | 617. 849 |
| Perry, 1 mile north of, in east coping stone, south abutment of bridge 235, 2,000 feet north of mile pole 457; copper bolt..... | 652. 499 |

| | Feet. |
|--|----------|
| Adair, 3 miles north of, in top stone of ballast wall on east side of south abutment of bridge over Rock Creek, about one-fourth mile north of mile pole 451; copper bolt..... | 664. 277 |
| Big Cabin, 3 miles south of, in top stone at east end of south abutment of bridge 230, near mile pole 450; square hole..... | 662. 925 |

Along township lines.

| | |
|--|-------------|
| Tps. 22 and 23 N., Rs. 17 and 18 E., corner of; iron post..... | 807. 056 |
| Tps. 22 and 23 N., Rs. 18 and 19 E., corner of; iron post..... | 636. 896 |
| Tps. 22 and 23 N., Rs. 19 and 20 E., corner of; iron post..... | 661. 296 |
| Tps. 22 and 23 N., Rs. 20 and 21 E., corner of; iron post..... | 693. 056 |
| Tps. 22 and 23 N., Rs. 21 and 22 E., corner of; iron post..... | 857. 823 |
| Tps. 21 and 22 N., Rs. 21 and 22 E., corner of; iron post..... | 1, 016. 053 |
| Tps. 21 and 22 N., Rs. 20 and 21 E., corner of; iron post..... | 945. 551 |
| Tps. 21 and 22 N., Rs. 19 and 20 E., corner of; iron post..... | 674. 151 |
| Tps. 21 and 22 N., Rs. 18 and 19 E., witness corner of; iron post..... | 609. 760 |
| Tps. 21 and 22 N., Rs. 17 and 18 E., corner of; iron post..... | 801. 292 |
| T. 20 N., Rs. 17 and 18 E., closing corner of; iron post..... | 630. 354 |
| T. 21 N., Rs. 17 and 18 E., standard corner of; iron post..... | 632. 144 |
| T. 20 N., Rs. 18 and 19 E., closing corner of; iron post..... | 622. 374 |
| T. 21 N., Rs. 18 and 19 E., standard corner of; iron post..... | 623. 604 |
| T. 20 N., Rs. 19 and 20 E., closing corner of; iron post..... | 658. 933 |
| T. 21 N., Rs. 19 and 20 E., standard corner of; iron post..... | 663. 905 |
| T. 20 N., Rs. 20 and 21 E., closing corner of; iron post..... | 894. 933 |
| T. 21 N., Rs. 20 and 21 E., witness corner to standard corner of; iron post..... | 789. 013 |
| T. 20 N., Rs. 21 and 22 E., closing corner of; iron post..... | 964. 313 |
| T. 21 N., Rs. 21 and 22 E., standard corner of; iron post..... | 1, 001. 823 |
| Tps. 19 and 20 N., Rs. 21 and 22 E., corner of; iron post..... | 1, 128. 225 |
| Tps. 19 and 20 N., Rs. 20 and 21 E., corner of; iron post..... | 903. 415 |
| Tps. 19 and 20 N., Rs. 19 and 20 E., corner of; iron post..... | 646. 085 |
| Tps. 19 and 20 N., Rs. 18 and 19 E., corner of; iron post..... | 656. 565 |
| Tps. 19 and 20 N., Rs. 17 and 18 E., corner of; iron post..... | 630. 255 |
| Tps. 18 and 19 N., Rs. 17 and 18 E., corner of; iron post..... | 611. 454 |
| Tps. 18 and 19 N., Rs. 18 and 19 E., corner of; iron post..... | 629. 560 |
| Tps. 18 and 19 N., Rs. 19 and 20 E., corner of; iron post..... | 887. 155 |
| Tps. 18 and 19 N., Rs. 20 and 21 E., corner of; iron post..... | 922. 186 |
| Tps. 18 and 19 N., Rs. 21 and 22 E., corner of; iron post..... | 966. 446 |

Siloam Springs Quadrangle.

[Latitude 36°-36° 30'; longitude 94° 30'-95°.]

DELAWARE COUNTY.

The railroad levels were run by Robert Coe and W. S. D. Moore. W. E. Earle, G. Nick, E. W. Hill, S. C. Pitts, and H. L. Muldrow, jr., did the leveling along township lines.

Along Kansas City Southern Ry. to Siloam Spings, Ark.

| | Feet. |
|--|-------------|
| Tps. 18 and 19 N., Rs. 25 and 26 E., corner of, 12 chains west from railroad; iron post..... | 1, 048. 378 |
| Intersection of railroad with Arkansas-Oklahoma boundary line; iron post..... | 976. 88 |

Along township lines.

| | Feet. |
|--|-----------|
| Tps. 22 and 23 N., Rs. 22 and 23 E., corner of; iron post----- | 1,027.496 |
| Tps. 22 and 23 N., Rs. 23 and 24 E., corner of; iron post----- | 1,063.416 |
| Tps. 22 and 23 N., Rs. 24 and 25 E., corner of; iron post----- | 1,135.653 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 22 and 23 N., R. 25 E.; iron post----- | 1,069.253 |
| Arkansas-Oklahoma boundary line, witness to closing corner Tps. 21 and 22 N., R. 25 E.; iron post----- | 987.812 |
| Tps. 21 and 22 N., Rs. 24 and 25 E., corner of; iron post----- | 981.663 |
| Tps. 21 and 22 N., Rs. 23 and 24 E., corner of; iron post----- | 1,034.203 |
| Tps. 21 and 22 N., Rs. 22 and 23 E., corner of; iron post----- | 969.553 |
| T. 20 N., Rs. 22 and 23 E., closing corner of; iron post----- | 1,061.673 |
| T. 21 N., Rs. 22 and 23 E., standard corner of; iron post----- | 1,003.103 |
| T. 20 N., Rs. 23 and 24 E., closing corner of; iron post----- | 1,100.208 |
| T. 21 N., Rs. 23 and 24 E., standard corner of; iron post----- | 1,091.423 |
| T. 20 N., Rs. 24 and 25 E., closing corner of; iron post----- | 1,144.603 |
| T. 21 N., Rs. 24 and 25 E., standard corner of; iron post----- | 1,163.743 |
| T. 20 N., Rs. 25 and 26 E., closing corner of; iron post----- | 1,163.485 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 20 and 21 N., R. 25 E.; iron post----- | 1,142.713 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 19 and 20 N., R. 26 E.; iron post----- | 1,152.427 |
| Tps. 19 and 20 N., Rs. 25 and 26 E., corner of; iron post----- | 1,129.422 |
| Tps. 19 and 20 N., Rs. 24 and 25 E., corner of; iron post----- | 979.373 |
| Tps. 19 and 20 N., Rs. 23 and 24 E., corner of; iron post----- | 1,113.823 |
| Tps. 19 and 20 N., Rs. 22 and 23 E., corner of; iron post----- | 1,110.753 |
| Tps. 18 and 19 N., Rs. 22 and 23 E., corner of; iron post----- | 1,007.273 |
| Tps. 18 and 19 N., Rs. 23 and 24 E., corner of; iron post----- | 1,050.281 |
| Tps. 18 and 19 N., Rs. 24 and 25 E., corner of; iron post----- | 1,079.578 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 18 and 19 N., R. 26 E.; iron post----- | 1,101.062 |

Winslow Quadrangle.

[Latitude 35° 30'-36°; longitude 94°-94° 30'.]

SEQUOYAH COUNTY.

Levels for this small fractional quadrangle were run by J. H. Carlock and H. M. Tidwell.

Along township lines.

| | Feet. |
|---|-----------|
| Arkansas-Oklahoma boundary line, closing corner Tps. 15 and 16 N., R. 26 E.; iron post----- | 1,064.238 |
| Tps. 14 and 15 N., Rs. 26 and 27 E., corner of; iron post----- | 1,576.13 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 14 and 15 N., R. 27 E.; iron post----- | 1,583.43 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 13 and 14 N., R. 27 E.; iron post----- | 1,019.74 |
| Tps. 13 and 14 N., Rs. 26 and 27 E., corner of; iron post----- | 958 |
| T. 12 N., Rs. 26 and 27 E., closing corner of; iron post----- | 592.308 |
| T. 13 N., Rs. 26 and 27 E., standard corner of; iron post----- | 659.068 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 12 and 13 N., R. 27 E., iron post----- | 702.888 |

Tahlequah Quadrangle.¹

[Latitude 35° 30'–36°; longitude 94° 30'–95°.]

ADAIR, CHEROKEE, AND SEQUOYAH COUNTIES.

The railroad levels were run by E. L. Faison, W. S. D. Moore, and Robert Coe. W. S. D. Moore, J. H. Carlock, J. P. Walker, H. L. Muldrow, jr., H. M. Tidwell, H. H. Hellen, and D. Hannegan did the leveling along township lines.

From Marble along Kansas City Southern Ry. to Westville.

| | Feet. |
|--|-------------|
| Marble, 2 miles south of, intersection of railroad with third standard parallel north. R. 23 E., near railroad mile pole 283; iron post..... | 637. 527 |
| Marble, 1 mile north of, intersection of railroad with township line, T. 13 N., Rs. 23 and 24 E., near railroad mile pole 280; iron post.... | 641. 991 |
| Bunch, 1½ miles south of, bridge over Sallisaw Creek; on northwest corner of south abutment..... | 736. 515 |
| Kenedy's siding, 2 miles north of, intersection of railroad with township line, Tps. 14 and 15 N., R. 24 E., 1,000 feet south of railroad mile pole 268; iron post..... | 840. 17 |
| Stilwell, in northeast corner of foundation stone of coal chute; square hole | 1, 108. 048 |
| Barren, 2 miles south of, intersection of railroad with fourth standard parallel, 45 feet west of quarter corner of sec. 34, T. 17 N., R. 25 E., 660 feet north of mile pole 252; iron post..... | 926. 816 |
| Barren, one-half mile south of, bridge over Barren Forks, on last coping stone of north abutment; northwest anchor bolt..... | 878. 073 |
| Westville, intersection of railroad and township line. Tps. 17 and 18 N., R. 26 E., 1,480 feet north of mile pole 245, 1,700 feet south of Westville station; iron post..... | 1, 126. 442 |

Along township lines.

| | |
|--|-------------|
| Tps. 17 and 18 N., Rs. 22 and 23 E., corner of; iron post..... | 731. 011 |
| Tps. 17 and 18 N., Rs. 23 and 24 E., corner of; iron post..... | 1, 032. 411 |
| Tps. 17 and 18 N., Rs. 24 and 25 E., corner of; iron post..... | 1, 109. 151 |
| Tps. 17 and 18 N., Rs. 25 and 26 E., corner of; iron post..... | 1, 125. 833 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 17 and 18 N., R. 26 E.; iron post..... | 1, 178. 843 |
| Arkansas-Oklahoma boundary line, closing corner fourth standard parallel, R. 26 E.; iron post..... | 1, 121. 296 |
| T. 17 N., Rs. 25 and 26 E., standard corner of; iron post..... | 1, 090. 946 |
| T. 16 N., Rs. 25 and 26 E., closing corner of; iron post..... | 1, 132. 766 |
| T. 17 N., Rs. 24 and 25 E., standard corner of; iron post..... | 1, 158. 445 |
| T. 16 N., Rs. 24 and 25 E., closing corner of; iron post..... | 1, 076. 095 |
| T. 17 N., Rs. 23 and 24 E., standard corner of; iron post..... | 1, 097. 915 |
| T. 16 N., Rs. 23 and 24 E., closing corner of; iron post..... | 1, 062. 815 |
| T. 17 N., Rs. 22 and 23 E., standard corner of; iron post..... | 894. 772 |
| T. 16 N., Rs. 22 and 23 E., closing corner of; iron post..... | 923. 739 |
| Tps. 15 and 16 N., Rs. 22 and 23 E., witness corner to; iron post.... | 625. 736 |

¹ There is an unadjusted error of 4 feet in the leveling in this quadrangle. The elevations given are therefore of but little value.

| | Feet. |
|---|----------|
| er, 54 feet north of intersection of Missouri, Kansas & Texas St. Louis, Iron Mountain & Southern railroads, in stone; r bolt..... | 581. 472 |
| Illinois along St. Louis, Iron Mountain & Southern Ry. to Wagoner. | |
| 2 miles south of, in coping stone of north side of west pier edge over Illinois River; copper bolt..... | 480. 282 |
| 2½ miles north of, at intersection of railroad and third stand- parallel north; a sandstone post 18 by 18 by 15 inches, set between two small elm trees, which are 55.8 east of railroad..... | 503. 203 |
| 3 miles south of, 45 feet east of railroad, in 24-inch post oak nail..... | 497. 454 |
| 3 miles north of, in third coping stone of north end of east of bridge 104, which is 700 feet west of mile pole 567; copper | 505. 315 |
| bson, 2½ miles south of, in second coping stone of east pier of e 106 over Bayou Manard; square hole..... | 513. 732 |
| lbson, 1 mile north of, in third coping stone of east pier of e over Grand River; copper bolt..... | 518. 515 |
| , 1 mile south of, 75 feet east of track, 300 feet east of mile 579, in 12-inch post oak; nail..... | 553. 334 |
| , 1 mile north of, 75 feet east of track, 90 feet north of mile 581, in 20-inch red oak; nail..... | 518. 528 |
| er, in first course of stone, 2½ feet above sidewalk, and 8 inches south corner of First National Bank Building; bronze tablet.. | 591. 436 |

Along township lines.

| | |
|---|----------|
| and 18 N., Rs. 17 and 18 E., corner of; iron post..... | 558. 162 |
| and 18 N., Rs. 18 and 19 E., corner of; iron post..... | 548. 261 |
| and 18 N., Rs. 19 and 20 E., corner of; iron post..... | 694. 923 |
| and 18 N., Rs. 20 and 21 E., corner of; iron post..... | 679. 141 |
| and 18 N., Rs. 21 and 22 E., corner of; iron post..... | 931. 561 |
| ., Rs. 21 and 22 E., standard corner of; iron post..... | 801. 569 |
| ., Rs. 21 and 22 E., closing corner of; iron post..... | 817. 089 |
| ., Rs. 20 and 21 E., standard corner of; iron post..... | 814. 423 |
| ., Rs. 20 and 21 E., closing corner of; iron post..... | 759. 873 |
| ., Rs. 19 and 20 E., standard corner of; iron post..... | 682. 989 |
| ., Rs. 18 and 19 E., standard corner of; iron post..... | 568. 105 |
| ., Rs. 17 and 18 E., standard corner of; iron post..... | 516. 175 |
| and 16 N., Rs. 17 and 18 E., corner of; iron post..... | 611. 222 |
| and 16 N., Rs. 18 and 19 E., corner of; iron post..... | 518. 2 |
| and 16 N., Rs. 19 and 20 E., corner of; iron post..... | 604. 499 |
| and 16 N., Rs. 20 and 21 E., corner of; iron post..... | 669. 365 |
| and 16 N., Rs. 21 and 22 E., corner of; iron post..... | 835. 446 |
| and 15 N., Rs. 21 and 22 E., corner of; iron post..... | 771. 502 |
| and 15 N., Rs. 20 and 21 E., corner of; iron post..... | 663. 562 |
| and 15 N., Rs. 18 and 19 E., corner of; iron post..... | 563. 153 |
| and 15 N., Rs. 17 and 18 E., corner of; iron post..... | 629. 221 |
| and 14 N., Rs. 17 and 18 E., corner of; iron post..... | 615. 197 |
| and 14 N., Rs. 16 and 17 E., corner of; iron post..... | 573. 197 |
| and 14 N., Rs. 15 and 16 E., corner of; iron post..... | 779. 775 |
| and 14 N., Rs. 14 and 15 E., corner of; iron post..... | 530. 225 |
| and 14 N., Rs. 13 and 14 E., corner of; iron post..... | 831. 097 |

| | Feet. |
|--|---------|
| T. 12 N., Rs. 21 and 22 E., closing corner of; iron post..... | 802.963 |
| T. 13 N., Rs. 20 and 21 E., standard corner of; iron post..... | 613.945 |
| T. 12 N., Rs. 20 and 21 E., closing corner of; iron post..... | 507.083 |
| T. 13 N., Rs. 19 and 20 E., standard corner of; iron post..... | 536.045 |
| T. 12 N., Rs. 19 and 20 E., closing corner of; iron post..... | 547.099 |
| T. 13 N., Rs. 18 and 19 E., standard corner of; iron post..... | 513.016 |
| T. 12 N., Rs. 18 and 19 E., closing corner of; iron post..... | 515.755 |
| T. 13 N., Rs. 17 and 18 E., standard corner of; iron post..... | 711.645 |
| T. 12 N., Rs. 17 and 18 E., closing corner of; iron post..... | 736.745 |

Okmulgee Quadrangle.

[Latitude 35° 30'-36°; longitude 95° 30'-96°.]

MUSKOGEE, OKMULGEE, AND WAGONER COUNTIES.

W. S. D. Moore, C. B. Odell, A. F. Hassan, E. M. Fry, E. H. Lonsdale, and E. L. Faison had charge of independent level parties.

Along township lines.

| | Feet. |
|---|---------|
| Tps. 17 and 18 N., Rs. 12 and 13 E., corner of; iron post..... | 723.067 |
| Tps. 17 and 18 N., Rs. 13 and 14 E., corner of; iron post..... | 621.257 |
| Tps. 17 and 18 N., Rs. 14 and 15 E., corner of; iron post..... | 632.297 |
| Tps. 17 and 18 N., Rs. 15 and 16 E., corner of; iron post..... | 726.357 |
| Tps. 17 and 18 N., Rs. 16 and 17 E., corner of; iron post..... | 527.007 |
| T. 17 N., Rs. 16 and 17 E., standard corner of; iron post..... | 607.495 |
| T. 17 N., Rs. 15 and 16 E., standard corner of; iron post..... | 568.459 |
| T. 17 N., Rs. 14 and 15 E., standard corner of; iron post..... | 707.2 |
| T. 17 N., Rs. 13 and 14 E., standard corner of; iron post..... | 600.175 |
| T. 17 N., Rs. 12 and 13 E., standard corner of; iron post..... | 714.175 |
| Tps. 15 and 16 N., Rs. 12 and 13 E., corner of; iron post..... | 719.168 |
| Tps. 15 and 16 N., Rs. 13 and 14 E., corner of; iron post..... | 657.172 |
| Tps. 15 and 16 N., Rs. 14 and 15 E., corner of; iron post..... | 673.174 |
| Tps. 15 and 16 N., Rs. 15 and 16 E., corner of; iron post..... | 565.187 |
| Tps. 15 and 16 N., Rs. 16 and 17 E., corner of; iron post..... | 570.268 |
| Tps. 14 and 15 N., Rs. 16 and 17 E., corner of; iron post..... | 653.174 |
| Tps. 14 and 15 N., Rs. 15 and 16 E., corner of; iron post..... | 610.19 |
| Tps. 14 and 15 N., Rs. 14 and 15 E., corner of; iron post..... | 674.174 |
| Tps. 14 and 15 N., Rs. 13 and 14 E., corner of; iron post..... | 771.188 |
| Tps. 14 and 15 N., Rs. 12 and 13 E., corner of; iron post..... | 888.166 |
| Tps. 13 and 14 N., Rs. 12 and 13 E., corner of; iron post. (Destroyed.) | |
| Tps. 13 and 14 N., Rs. 13 and 14 E., corner of; iron post..... | 701.195 |
| Tps. 13 and 14 N., Rs. 14 and 15 E., corner of; iron post..... | 661.198 |
| Tps. 13 and 14 N., Rs. 15 and 16 E., corner of; iron post..... | 638.197 |
| Tps. 13 and 14 N., Rs. 16 and 17 E., corner of; iron post..... | 683.855 |
| T. 13 N., Rs. 16 and 17 E., standard corner of; iron post..... | 614.863 |
| T. 12 N., Rs. 16 and 17 E., closing corner of; iron post..... | 619.846 |
| T. 13 N., Rs. 15 and 16 E., standard corner of; iron post..... | 647.858 |
| T. 12 N., Rs. 15 and 16 E., closing corner of; iron post..... | 642.823 |
| T. 13 N., Rs. 14 and 15 E., standard corner of; iron post..... | 808.861 |
| T. 12 N., Rs. 14 and 15 E., closing corner of; iron post..... | 745.85 |
| T. 13 N., Rs. 13 and 14 E., standard corner of; iron post..... | 663.86 |

| | Feet. |
|--|---------|
| T. 12 N., Rs. 13 and 14 E., closing corner of; iron post..... | 651.886 |
| T. 13 N., Rs. 12 and 13 E., standard corner of; iron post..... | 792.952 |
| T. 12 N., Rs. 12 and 13 E., closing corner of; iron post..... | 810.215 |

Nuyaka Quadrangle.

[Latitude 35° 30'–36°; longitude 96°–96° 30'.]

CREEK COUNTY.

The leveling in this quadrangle was done by W. S. D. Moore, W. R. Manning, A. F. Hassan, E. M. Fry, E. L. Faison, C. B. Odell, and E. H. Lonsdale.

Along township lines.

| | Feet. |
|--|---------|
| Tps. 17 and 18 N., Rs. 8 and 9 E., corner of; iron post..... | 884.885 |
| Tps. 17 and 18 N., Rs. 11 and 12 E., corner of; iron post..... | 652.175 |
| T. 17 N., Rs. 11 and 12 E., standard corner of; iron post..... | 884.175 |
| T. 16 N., Rs. 11 and 12 E., closing corner of; iron post..... | 846.027 |
| T. 17 N., Rs. 10 and 11 E., standard corner of; iron post..... | 770.137 |
| T. 16 N., Rs. 10 and 11 E., closing corner of; iron post..... | 702.285 |
| T. 16 N., Rs. 9 and 10 E., closing corner of; iron post..... | 761.305 |
| T. 17 N., Rs. 8 and 9 E., standard corner of; iron post..... | 926.309 |
| Tps. 15 and 16 N., Rs. 8 and 9 E., corner of; iron post..... | 783.763 |
| Tps. 15 and 16 N., Rs. 9 and 10 E., corner of; iron post..... | 760.385 |
| Tps. 15 and 16 N., Rs. 10 and 11 E., corner of; iron post..... | 972.152 |
| Tps. 15 and 16 N., Rs. 11 and 12 E., corner of; iron post..... | 795.165 |
| Tps. 14 and 15 N., Rs. 11 and 12 E., corner of; iron post..... | 834.169 |
| Tps. 14 and 15 N., Rs. 10 and 11 E., corner of; iron post..... | 729.351 |
| Tps. 14 and 15 N., Rs. 9 and 10 E., corner of; iron post..... | 801.297 |
| Tps. 14 and 15 N., Rs. 8 and 9 E., corner of; iron post..... | 848.11 |
| Tps. 13 and 14 N., Rs. 8 and 9 E., corner of; iron post..... | 720.728 |
| Tps. 13 and 14 N., Rs. 9 and 10 E., corner of; iron post..... | 759.488 |
| Tps. 13 and 14 N., Rs. 10 and 11 E., corner of; iron post..... | 676.398 |
| Tps. 13 and 14 N., Rs. 11 and 12 E., corner of; iron post..... | 872.598 |
| T. 13 N., Rs. 11 and 12 E., standard corner of; iron post..... | 844.561 |
| T. 13 N., Rs. 10 and 11 E., standard corner of; iron post..... | 751.85 |
| T. 13 N., Rs. 9 and 10 E., standard corner of; iron post..... | 785.842 |
| T. 13 N., Rs. 8 and 9 E., standard corner of; iron post..... | 879.842 |

Wewoka Quadrangle.

[Latitude 35°–35° 30'; longitude 96°–96° 30'.]

HUGHES AND OKFUSKEE COUNTIES.

The railroad levels were run by E. L. Faison. W. S. D. Moore, W. R. Manning, and E. L. Faison had independent level parties.

From Holdenville along Choctaw, Oklahoma & Gulf R. R. to Wewoka.

| | Feet. |
|--|---------|
| Holdenville, 3 miles east of, in large stone; square hole 30 feet south of track, 35 feet east of trestle No. 154..... | 815.159 |
| Holdenville, at northwest corner of platform, 75 feet west of station building, 15 feet north of track; iron post..... | 864.244 |
| Wewoka, south of track, 5 feet east of mile pole No. 99 and 2,400 feet west of station building; iron post..... | 785.777 |

| | Feet. |
|---|---------|
| Bond, in stone on northwest side of stone culvert, north of section house 75, 90 feet north of switch; copper bolt----- | 663.031 |
| Checotah, 0.3 mile south of, in cottonwood tree 60 feet west of track and 100 feet north of mile pole 525; nail----- | 639.201 |

Along township lines.

| | |
|--|---------|
| Tps. 11 and 12 N., Rs. 12 and 13 E., corner of; iron post----- | 874.865 |
| Tps. 11 and 12 N., Rs. 13 and 14 E., corner of; iron post----- | 595.88 |
| Tps. 11 and 12 N., Rs. 14 and 15 E., corner of; iron post----- | 759.820 |
| Tps. 11 and 12 N., Rs. 15 and 16 E., corner of; iron post----- | 661.538 |
| Tps. 11 and 12 N., Rs. 16 and 17 E., corner of; iron post----- | 642.989 |
| Tps. 10 and 11 N., Rs. 16 and 17 E., corner of; iron post----- | 631.512 |
| Tps. 10 and 11 N., Rs. 15 and 16 E., corner of; iron post----- | 610.978 |
| Tps. 10 and 11 N., Rs. 14 and 15 E., corner of; iron post----- | 633.342 |
| Tps. 10 and 11 N., Rs. 13 and 14 E., corner of; iron post----- | 665.469 |
| Tps. 10 and 11 N., Rs. 12 and 13 E., corner of; iron post----- | 737.478 |
| Tps. 9 and 10 N., Rs. 12 and 13 E., corner of; iron post----- | 805.885 |
| Tps. 9 and 10 N., Rs. 13 and 14 E., corner of; iron post----- | 717.269 |
| Tps. 9 and 10 N., Rs. 14 and 15 E., corner of; iron post----- | 674.545 |
| Tps. 9 and 10 N., Rs. 15 and 16 E., corner of; iron post----- | 633.256 |
| Tps. 9 and 10 N., Rs. 16 and 17 E., corner of; iron post----- | 567.803 |
| T. 9 N., Rs. 16 and 17 E., standard corner of; iron post----- | 504.048 |
| T. 9 N., Rs. 15 and 16 E., standard corner of; iron post----- | 606.909 |
| T. 9 N., Rs. 14 and 15 E., standard corner of; iron post----- | 677.827 |
| T. 9 N., Rs. 13 and 14 E., standard corner of; iron post----- | 696.866 |
| T. 9 N., Rs. 12 and 13 E., standard corner of; iron post----- | 722.91 |
| Tps. 7 and 8 N., Rs. 12 and 13 E., corner of; iron post----- | 840.844 |
| Tps. 7 and 8 N., Rs. 13 and 14 E., corner of; iron post----- | 704.795 |
| Tps. 7 and 8 N., Rs. 14 and 15 E., corner of; iron post----- | 653.81 |
| Tps. 7 and 8 N., Rs. 15 and 16 E., corner of; iron post----- | 719.276 |
| Tps. 7 and 8 N., Rs. 16 and 17 E., corner of; iron post----- | 762.818 |
| Tps. 6 and 7 N., Rs. 16 and 17 E., corner of; iron post----- | 763.818 |
| Tps. 6 and 7 N., Rs. 15 and 16 E., corner of; iron post----- | 559.947 |
| Tps. 6 and 7 N., Rs. 14 and 15 E., corner of; iron post----- | 882.861 |
| Tps. 6 and 7 N., Rs. 13 and 14 E., corner of; iron post----- | 659.959 |
| Tps. 6 and 7 N., Rs. 12 and 13 E., corner of; iron post----- | 768.841 |

Sansbois Quadrangle.

[Latitude 35°-35° 30'; longitude 95°-95° 30']

HASKELL COUNTY.

The leveling was done by G. A. Purington, W. S. D. Moore, George Nick, and J. P. Walker.

| | Feet. |
|--|---------|
| Tps. 11 and 12 N., Rs. 12 and 13 E., corner of; iron post----- | 658.974 |
| Tps. 11 and 12 N., Rs. 13 and 14 E., corner of; iron post----- | 590.494 |
| Tps. 11 and 12 N., Rs. 14 and 15 E., corner of; iron post----- | 559.625 |
| Tps. 11 and 12 N., Rs. 15 and 16 E., corner of; iron post----- | 472.948 |
| Tps. 11 and 12 N., Rs. 16 and 17 E., corner of; iron post----- | 520.914 |

| | Feet. |
|--|-----------|
| Tps. 10 and 11 N., Rs. 21 and 22 E., corner of; iron post----- | 562.5 |
| Tps. 10 and 11 N., Rs. 20 and 21 E., corner of; iron post----- | 470.641 |
| Tps. 10 and 11 N., Rs. 19 and 20 E., corner of; iron post----- | 562.514 |
| Tps. 10 and 11 N., Rs. 18 and 19 E., corner of; iron post----- | 874.383 |
| Tps. 10 and 11 N., Rs. 17 and 18 E., corner of; iron post----- | 588.11 |
| Tps. 9 and 10 N., Rs. 17 and 18 E., corner of; iron post----- | 873.508 |
| Tps. 9 and 10 N., Rs. 18 and 19 E., corner of; iron post----- | 817.035 |
| Tps. 9 and 10 N., Rs. 19 and 20 E., corner of; iron post----- | 518.562 |
| Tps. 9 and 10 N., Rs. 20 and 21 E., corner of; iron post----- | 543.781 |
| Tps. 9 and 10 N., Rs. 21 and 22 E., corner of; iron post----- | 607.42 |
| T. 9 N., Rs. 21 and 22 E., standard corner of; iron post----- | 475.754 |
| T. 8 N., Rs. 21 and 22 E., closing corner of; iron post----- | 479.854 |
| T. 9 N., Rs. 20 and 21 E., standard corner of; iron post----- | 684.274 |
| T. 8 N., Rs. 20 and 21 E., closing corner of; iron post----- | 708.724 |
| T. 9 N., Rs. 19 and 20 E., standard corner of; iron post----- | 629.104 |
| T. 8 N., Rs. 19 and 20 E., closing corner of; iron post----- | 657.434 |
| T. 9 N., Rs. 18 and 19 E., standard corner of; iron post----- | 903.987 |
| T. 8 N., Rs. 18 and 19 E., closing corner of; iron post----- | 939.239 |
| T. 9 N., Rs. 17 and 18 E., standard corner of; iron post----- | 836.587 |
| T. 8 N., Rs. 17 and 18 E., closing corner of; iron post----- | 842.344 |
| Tps. 7 and 8 N., Rs. 17 and 18 E., corner of; iron post----- | 917.597 |
| Tps. 7 and 8 N., Rs. 18 and 19 E., corner of; iron post----- | 618.817 |
| Tps. 7 and 8 N., Rs. 19 and 20 E., corner of; iron post----- | 534.857 |
| Tps. 7 and 8 N., Rs. 20 and 21 E., corner of; iron post----- | 622.677 |
| Tps. 7 and 8 N., Rs. 21 and 22 E., corner of; iron post----- | 604.797 |
| Tps. 6 and 7 N., Rs. 21 and 22 E., corner of; iron post----- | 803.106 |
| Tps. 6 and 7 N., Rs. 20 and 21 E., corner of; iron post----- | 833.526 |
| Tps. 6 and 7 N., Rs. 19 and 20 E., corner of; iron post----- | 950.668 |
| Tps. 6 and 7 N., Rs. 18 and 19 E., corner of; iron post----- | 1,295.068 |
| Tps. 6 and 7 N., Rs. 17 and 18 E., corner of; iron post----- | 902.81 |

Sallisaw Quadrangle.

[Latitude 35°-35° 30'; longitude 94° 30'-95°.]

LE FLORE, HASKELL, AND SEQUOYAH COUNTIES.

The railroad levels were run by Robert Coe, G. A. Purington, E. L. Faison, E. M. Fry, C. H. Hickman, and J. W. Phelan. J. H. Carlock, J. P. Walker, D. Voorhees, E. M. Fry, and G. A. Purington did the leveling along township lines.

From Sallisaw along Kansas City Southern Ry. to Poteau.

| | Feet. |
|--|---------|
| Sallisaw, at south end of platform, east of track, at Kansas City Southern Ry. station; iron post----- | 526.051 |
| Sallisaw, 4 miles south of, intersection of railroad with sixth guide meridian east, in line of telegraph poles, 3,000 feet north of mile pole 295; iron post----- | 568.902 |
| Gans, 0.5 mile south of, the intersection of railroad with township line, Tps. 10 and 11 N., R. 25 E., in line of telegraph poles, 35 feet west of track; iron post----- | 483.36 |
| Redland, 0.5 mile south of, intersection of railroad with township line, Tps. 9 and 10 N., R. 25 E., 15 feet west of track; iron post----- | 477.435 |

| | Feet. |
|---|----------|
| Oak Lodge, 2½ miles south of, intersection of railroad with second standard parallel north, R. 25 E., 50 feet west of track, in white oak (blazed and marked); spike..... | 476. 52 |
| Shady Point, 0.5 mile south of, intersection of township line, Tps. 7 and 8 N., R. 25 E., 100 feet south of mile pole 321, 60 feet west of track; iron post..... | 429. 365 |
| Poteau, at south end of station platform, 36 feet west of main track; iron post..... | 458. 805 |
| Poteau, 1.8 miles south of, intersection of railroad with township line, Tps. 6 and 7 N., R. 25 E., 60 feet west of track, in water oak; nail..... | 443. 605 |

From Cameron along St. Louis & San Francisco R. R. to Poteau.

| | |
|---|----------|
| Cameron, 57 feet east of track, 60 feet north of station building, in stone monument, referenced by a stone 12 feet north and one 12 feet east; copper bolt..... | 489. 391 |
| Cameron, in fifth stone above foundation course at southeast corner of general store and post-office building, owned by Mrs. F. H. Carr, 170 feet west of St. Louis & San Francisco track, 27 feet south of prolonged line of south end of station building; bronze tablet..... | 489. 318 |
| Cameron, 5 miles south of, 60 feet east of track, 260 feet north of mile pole 441, in 12-inch hickory tree; nail..... | 447. 279 |
| Poteau, 2 miles south of, 70 feet west of track, 800 feet south of mile pole 447, in "twin" post oak; nail..... | 507. 296 |

From Cherokee along St. Louis, Iron Mountain & Southern Ry. to Vian.

| | |
|---|----------|
| Cherokee, 5 miles west of, at bridge 26, 70 feet south of track, in 15-inch black oak tree; spike..... | 482. 546 |
| Muldrow, sandstone post, 24 by 6 by 6 inches, buried 6 inches below surface, 71.3 feet from northeast corner of station building, 30 feet from "mail grab"; marked B + M..... | 512. 646 |
| Hanson, 100 feet south of track, in 4-inch red oak tree; spike..... | 570. 541 |
| Sallisaw, buried south of station building, 40.6 feet from southeast and 44.8 feet from southwest corners of same; sandstone post 24 by 8 by 5 inches, marked B + M, U.S.G.S..... | 531. 988 |
| McKey, 60 feet north of track, in 8-inch red oak; spike..... | 537. 886 |
| Vian, buried 6 inches beneath the surface, south of station building, 31.7 feet from southwest and 36.7 feet from southeast corners of same; sandstone post 28 by 8 by 4 inches, marked B + M, U.S.G.S..... | 547. 398 |

Along township lines.

| | |
|--|----------|
| Tps. 11 and 12 N., Rs. 22 and 23 E., corner of; iron post..... | 479. 908 |
| Tps. 11 and 12 N., Rs. 23 and 24 E., corner of; iron post..... | 552. 194 |
| Tps. 11 and 12 N., Rs. 24 and 25 E., corner of; iron post..... | 534. 458 |
| Tps. 11 and 12 N., Rs. 25 and 26 E., corner of; iron post..... | 686. 798 |
| Tps. 10 and 11 N., Rs. 25 and 26 E., corner of; iron post..... | 479. 475 |
| Tps. 10 and 11 N., Rs. 24 and 25 E., corner of; iron post..... | 566. 690 |
| Tps. 10 and 11 N., Rs. 23 and 24 E., corner of iron post..... | 496. 763 |
| Tps. 10 and 11 N., Rs. 22 and 23 E., corner of; iron post..... | 447. 428 |
| Tps. 9 and 10 N., Rs. 22 and 23 E., corner of; iron post..... | 460. 347 |
| Tps. 9 and 10 N., Rs. 23 and 24 E., corner of; iron post..... | 605. 799 |
| Tps. 9 and 10 N., Rs. 24 and 25 E., corner of; iron post..... | 441. 893 |
| Tps. 9 and 10 N., Rs. 25 and 26 E., corner of; iron post..... | 425. 323 |

| | Feet. |
|---|-----------|
| T. 8 N., Rs. 26 and 27 E., closing corner of; iron post----- | 624.170 |
| T. 9 N., Rs. 25 and 26 E., standard corner of; iron post----- | 439.330 |
| T. 8 N., Rs. 25 and 26 E., closing corner; iron post----- | 442.310 |
| T. 9 N., Rs. 24 and 25 E., standard corner of; iron post----- | 572.124 |
| T. 8 N., Rs. 24 and 25 E., closing corner of; iron post----- | 564.134 |
| T. 9 N., Rs. 23 and 24 E., standard corner of; iron post----- | 555.414 |
| T. 8 N., Rs. 23 and 24 E., closing corner of; iron post----- | 542.174 |
| T. 9 N., Rs. 22 and 23 E., standard corner of; iron post----- | 695.254 |
| T. 8 N., Rs. 22 and 23 E., closing corner of; iron post----- | 635.344 |
| Tps. 7 and 8 N., Rs. 22 and 23 E., corner of; iron post----- | 557.547 |
| Tps. 7 and 8 N., Rs. 23 and 24 E., corner of; iron post----- | 467.857 |
| Tps. 7 and 8 N., Rs. 24 and 25 E., corner of; iron post----- | 521.567 |
| Tps. 7 and 8 N., Rs. 25 and 26 E., corner of; iron post----- | 425.987 |
| Tps. 7 and 8 N., Rs. 26 and 27 E., corner of; iron post----- | 522.832 |
| Tps. 6 and 7 N., Rs. 26 and 27 E., corner of; iron post----- | 585.206 |
| Tps. 6 and 7 N., Rs. 25 and 26 E., corner of; iron post----- | 445.066 |
| Tps. 6 and 7 N., Rs. 24 and 25 E., corner of; iron post----- | 712.936 |
| Tps. 6 and 7 N., Rs. 23 and 24 E., corner of; iron post----- | 1,289.656 |
| Tps. 6 and 7 N., Rs. 22 and 23 E., corner of; iron post----- | 513.136 |

Fort Smith Quadrangle.

[Latitude 35°-35° 30'; longitude 94°-94° 30'.]

LE FLORE COUNTY.

J. H. Carlock and E. M. Fry did the leveling.

Along township lines.

| | Feet. |
|---|-----------|
| Tps. 11 and 12 N., Rs. 26 and 27 E., corner of; iron post----- | 725.498 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 11 and 12 N., R. 27 E.; iron post----- | 765.878 |
| Arkansas-Oklahoma boundary line, closing corner of Tps. 10 and 11 N., R. 27 E.; iron post----- | 437.655 |
| Tps. 10 and 11 N., Rs. 26 and 27 E., corner of; iron post----- | 420.205 |
| Tps. 9 and 10 N., Rs. 26 and 27 E., corner of; iron post----- | 422.853 |
| Arkansas-Oklahoma boundary line, closing corner of Tps. 9 and 10 N., R. 27 E.; iron post----- | 514.98 |
| Arkansas-Oklahoma boundary line, closing corner second standard parallel north, R. 27 E.; iron post----- | 556.94 |
| Tp. 9 N., Rs. 26 and 27 E., standard corner of; iron post----- | 621.790 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 7 and 8 N., R. 27 E.; iron post----- | 613.082 |
| Arkansas-Oklahoma boundary line, closing corner Tps. 6 and 7 N., R. 27 E.; iron post----- | 1,390.736 |

Poteau Mountain Quadrangle.

[Latitude 34° 30'-35°; longitude 94°-94° 30'.]

LE FLORE COUNTY.

E. M. Fry ran the railroad levels. W. P. Halliday and E. M. Fry *did the leveling* along township lines.

On Kansas City Southern Ry.

| | Feet. |
|---|-----------|
| Page, 5 miles south of, intersection of railroad with Arkansas-Oklahoma boundary line; iron post..... | 1,225.185 |

Along township lines.

| | |
|--|-----------|
| Arkansas-Oklahoma boundary line, closing corner of Tps. 5 and 6 N., R. 27 E.; iron post..... | 1,617.750 |
| Arkansas-Oklahoma boundary line, closing corner of Tps. 4 and 5 N., R. 27 E.; corner stone..... | 691.944 |
| Arkansas-Oklahoma boundary line, closing corner of Tps. 1 N. and 1 S., R. 27 E.; corner stone..... | 949.999 |

Winding Stair Quadrangle.

[Latitude 34° 30'–35°; longitude 94° 30'–95°.]

LE FLORE COUNTY.

Robert Coe, G. A. Purington, H. C. McCluer, and E. M. Fry ran the railroad levels. F. E. Fellows, G. A. Purington, E. M. Fry, W. P. Halliday, and G. H. Bartlett did the leveling along township lines.

Along Choctaw, Oklahoma & Gulf R. R. from Wister to Fanshawe.

| | Feet. |
|--|---------|
| Wister, in northeast angle of Choctaw, Oklahoma & Gulf and the St. Louis & San Francisco railroads, 150 feet from the Choctaw, Oklahoma & Gulf, and 350 feet from the St. Louis & San Francisco track; nail in 24-inch post oak..... | 475.852 |
| Wister, 0.5 mile west of, in south coping stone of east abutment of bridge No. 1; square hole..... | 482.638 |
| Wister, 1.5 miles west of, in north coping stone of east abutment of bridge No. 7. 500 feet west of milepost 214; square hole..... | 499.078 |
| Fanshawe, 2 miles east of, in north coping stone of east abutment of bridge near milepost 207; square hole..... | 555.431 |
| Fanshawe, 0.3 mile west of, 120 feet north of track and 100 feet west of milepost 205, 16-inch red oak tree; nail..... | 556.298 |
| Fanshawe, 3 miles west of, 130 feet north and 200 feet west of milepost 202, 18-inch elm tree; nail..... | 545.724 |

Along St. Louis & San Francisco R. R. from Cavanal to Le Flore.

| | |
|---|---------|
| Cavanal, 180 feet left of track, nearly opposite milepost 451; 24-inch post oak tree..... | 470.773 |
| Wister, 0.5 mile west of, in south coping stone of east pier of bridge 237 T; square hole cut..... | 474.481 |
| Wister, 1 mile southwest of, 150 feet south and 75 feet east of milepost 454, in 8-inch black oak tree; nail..... | 479.916 |
| Caston, 60 feet right of track, opposite milepost 456, in 30-inch white oak tree; nail..... | 496.669 |
| Pocahontas, 120 feet north and 100 west of milepost 458, in 20-inch red oak tree; nail..... | 563.802 |

| | Feet |
|---|---------|
| Folsom, 100 feet south of track, opposite milepost 403, in 16-inch white-oak tree; nail..... | 492.411 |
| Le Flore, 90 feet south and 100 feet east of station building, in 10-inch elm tree; nail..... | 534.257 |

Along Kansas City Southern Ry. from Heavener to Page.

| | |
|--|---------|
| Heavener, 2 miles north of, at intersection of railroad with north boundary of T. 5 N., R. 25 E.; iron post..... | 514.004 |
| Heavener, 1 mile north of, bridge over drain, in east coping stone of north abutment; copper bolt..... | 567.058 |
| Heavener, 1 mile south of, 650 feet south of milepost 338; iron post..... | 555.006 |
| Houston, 2 miles north of, at intersection of railroad with first standard parallel north, near milepost 342; iron post..... | 506.118 |
| Houston, 0.3 mile south of, bridge over drain, in east coping stone of north abutment; copper bolt..... | 542.121 |
| Thomasville, 0.3 mile south of, bridge over creek, in west coping stone or north abutment; copper bolt..... | 658.746 |
| Page, 0.5 mile south of; 60 feet west of track, 35 feet south of mile pole 355; root of 16-inch basswood tree..... | 928.135 |

Along township lines.

| | |
|---|-----------|
| Tps. 5 and 6 N., Rs. 26 and 27 E., corner of; iron post..... | 982.747 |
| Tps. 5 and 6 N., Rs. 25 and 26 E., corner of; iron post..... | 501.077 |
| Tps. 5 and 6 N., Rs. 24 and 25 E., corner of; iron post..... | 458.717 |
| Tps. 5 and 6 N., Rs. 23 and 24 E., corner of; iron post..... | 522.897 |
| Tps. 5 and 6 N., Rs. 22 and 23 E., corner of; iron post..... | 553.051 |
| T. 4 N., Rs. 22 and 23 E., closing corner of; on stone..... | 915.324 |
| T. 5 N., Rs. 22 and 23 E., standard corner of; iron post..... | 724.474 |
| T. 4 N., Rs. 23 and 24 E., closing corner of; iron post..... | 587.816 |
| T. 5 N., Rs. 23 and 24 E., standard corner of; on stone..... | 642.014 |
| T. 4 N., Rs. 24 and 25 E., closing corner of; on stone..... | 577.704 |
| T. 5 N., Rs. 24 and 25 E., standard corner of; iron post..... | 542.824 |
| T. 4 N., Rs. 25 and 26 E., closing corner of; iron post..... | 509.324 |
| T. 5 N., Rs. 25 and 26 E., standard corner of; iron post..... | 506.114 |
| T. 4 N., Rs. 26 and 27 E., closing corner of; iron post..... | 568.044 |
| T. 5 N., Rs. 26 and 27 E., standard corner of; iron post..... | 579.664 |
| Tps. 3 and 4 N., Rs. 26 and 27 E., corner of; iron post..... | 705.152 |
| Tps. 3 and 4 N., Rs. 25 and 26 E., corner of; iron post..... | 600.622 |
| Tps. 3 and 4 N., Rs. 24 and 25 E., corner of; iron post..... | 953.566 |
| Tps. 3 and 4 N., Rs. 23 and 24 E., corner of; iron post..... | 1,174.351 |
| Tps. 3 and 4 N., Rs. 22 and 23 E., corner of; iron post..... | 1,025.439 |
| Tps. 2 and 3 N., Rs. 22 and 23 E., corner of; iron post..... | 642.788 |
| Tps. 2 and 3 N., Rs. 23 and 24 E., corner of; iron post..... | 688.231 |
| Tps. 2 and 3 N., Rs. 24 and 25 E., corner of; iron post..... | 912.652 |
| Tps. 2 and 3 N., Rs. 25 and 26 E., corner of; iron post..... | 2,472.792 |
| Tps. 2 and 3 N., Rs. 26 and 27 E., corner of; iron post..... | 1,273.601 |
| Tps. 1 and 2 N., Rs. 26 and 27 E., corner of; iron post..... | 1,979.576 |
| Tps. 1 and 2 N., Rs. 25 and 26 E., corner of; iron post..... | 1,924.146 |
| Tps. 1 and 2 N., Rs. 24 and 25 E., corner of; iron post..... | 1,490.338 |
| Tps. 1 and 2 N., Rs. 23 and 24 E., corner of; iron post..... | 1,281.237 |
| Tps. 1 and 2 N., Rs. 22 and 23 E., corner of; iron post..... | 1,845.888 |
| T. 1 S., Rs. 22 and 23 E., closing corner of; iron post..... | 1,395.843 |

| | Feet. |
|--|-----------|
| T. 1 N., Rs. 22 and 23 E., standard corner of; iron post----- | 1,383.902 |
| T. 1 S., Rs. 23 and 24 E., closing corner of; iron post----- | 1,637.392 |
| T. 1 N., Rs. 23 and 24 E., standard corner of; iron post----- | 1,758.046 |
| Base Line triangulation station, sec. 31, T. 1 N., R. 24 E., near south- west corner of SW. $\frac{1}{4}$; 10-inch white-oak tree which has been used as signal tree----- | 1,990.843 |
| T. 1 S., Rs. 24 and 25 E., closing corner of; iron post----- | 889.819 |
| T. 1 N., Rs. 24 and 25 E., standard corner of; iron post----- | 876.553 |
| T. 1 S., Rs. 25 and 26 E., closing corner of; iron post----- | 868.589 |
| T. 1 N., Rs. 25 and 26 E., standard corner of; on stone----- | 898.769 |
| T. 1 S., Rs. 26 and 27 E., closing corner of; iron post----- | 942.239 |
| T. 1 N., Rs. 26 and 27 E., standard corner of; on stone----- | 905.909 |

Tuskahoma Quadrangle.

[Latitude 34° 30'–35°; longitude 95°–95° 30'.]

LATIMER AND PUSHMATAHA COUNTIES.

Robert Coe, H. C. McCluer, and G. A. Purington ran the railroad levels. E. L. Faison, F. E. Fellows, W. P. Halliday, G. H. Bartlett, W. A. Correll, C. Doster, W. S. D. Moore, G. A. Purington, and E. M. Fry did the leveling along township lines.

Along St. Louis & San Francisco R. R. from Bengal to Stanley.

| | Feet. |
|--|---------|
| Bengal, 0.3 mile northeast of, 60 feet southeast of track, 210 feet south of milepost 475; 15-inch red oak tree----- | 628.450 |
| Compton, 0.7 mile southwest of, bridge 286, near top of west end of north abutment; copper bolt----- | 908.411 |
| Talhina, 60 feet east of track, 100 feet south of milepost 484; 10-inch black gum tree----- | 675.727 |
| Albion, 60 feet east of track, 400 feet south of milepost 490; 20-inch post oak tree----- | 656.655 |
| Kiamichi, 0.7 mile northeast of, 40 feet west of track, 50 feet north of milepost 495; 15-inch post oak tree----- | 604.725 |
| Tuskahoma, in northeast corner of foundation of water tank; copper bolt----- | 570.396 |
| Clayton, 0.7 mile northeast of, 60 feet west of track, 80 feet northwest of milepost 506, near intersection with north boundary of T. 1 N., R. 19 E.; 10-inch post oak tree----- | 576.724 |
| Elzey, one-half mile northeast of, 50 feet west of track, 400 feet north of milepost 510; 24-inch red oak tree----- | 537.12 |
| Stanley, 60 feet southeast of track, 440 feet southwest of milepost 514; 10-inch hickory tree----- | 518.063 |

Along Cheetaw, Oklahoma & Gulf R. R. from Redoak to Gaines Creek.

| | |
|--|---------|
| Redoak, 0.7 mile west of, 105 feet north of track, 165 feet west of milepost 195; post oak tree----- | 596.000 |
| Panola, 5 miles west of, 110 feet north of track, 165 feet west of mile- post 191; 22-inch post oak tree----- | 616.289 |
| Panola, 0.3 mile east of, bridge 61, in first coping stone of northwest pier; copper bolt----- | 625.148 |

| | Feet. |
|---|---------|
| Pauls Valley, at corner of Paul and Santa Fe avenues, in center of east face of second stone above foundation of northeast corner of stone building owned by C. J. Grant; bronze tablet..... | 873.182 |
| Pauls Valley, 2.5 miles northwest of, Tps. 3 and 4 N., Rs. 1 E. and 1 W., about 900 feet west of railroad; iron post..... | 884.772 |
| Pauls, 2 miles north of, at witness corner to quarter section corner of sec. 36, T. 5 N., R. 1 W., 300 feet east of intersection of railroad with first standard parallel north; iron post..... | 935.189 |

Along township and section lines.

| | |
|---|-----------|
| Tps. 5 and 6 N., Rs. 2 and 3 W., corner of; iron post..... | 1,077.851 |
| Tps. 5 and 6 N., Rs. 1 and 2 W., corner of; iron post..... | 1,121.411 |
| Tps. 5 and 6 N., Rs. 1 E. and 1 W., corner of; iron post..... | 999.561 |
| Canadian River, meander corner on, T. 6 N., Rs. 1 E. and 1 W., secs. 31 and 36; iron post..... | 990.041 |
| Canadian River, meander corner on, between T. 5 N., R. 1 E., sec. 1, and T. 5 N., R. 2 E., sec. 6; iron post..... | 969.577 |
| Canadian River, meander corner on, between T. 5 N., R. 2 E., sec. 13, and T. 5 N., R. 3 E., sec. 18; iron post..... | 939.053 |
| T. 5 N., Rs. 2 and 3 E., standard corner of; iron post..... | 1,023.873 |
| T. 4 N., Rs. 2 and 3 E., closing corner of; iron post..... | 1,015.892 |
| T. 5 N., Rs. 1 and 1 E., standard corner of; iron post..... | 1,065.907 |
| T. 4 N., Rs. 1 and 2 E., closing corner of; iron post..... | 1,054.255 |
| Indian meridian, standard corner of Tps. 4 and 5 N., Rs. 1 E. and 1 W., at intersection with first standard parallel north; iron post..... | 949.571 |
| T. 4 N., Rs. 1 and 2 W., closing corner of; iron post..... | 1,025.479 |
| T. 5 N., Rs. 1 and 2 W., standard corner of; iron post..... | 1,013.619 |
| T. 4 N., Rs. 2 and 3 W., closing corner of; iron post..... | 982.159 |
| T. 5 N., Rs. 2 and 3 W., standard corner of; iron post..... | 988.349 |
| Tps. 3 and 4 N., Rs. 2 and 3 W., corner of; iron post..... | 990.152 |
| Tps. 3 and 4 N., Rs. 1 and 2 W., corner of; iron post..... | 979.882 |
| Tps. 3 and 4 N., Rs. 1 and 2 E., corner of; iron post..... | 922.582 |
| Tps. 3 and 4 N., Rs. 2 and 3 E., corner of; iron post..... | 1,042.562 |
| Tps. 2 and 3 N., Rs. 2 and 3 E., corner of; iron post..... | 1,106.464 |
| Tps. 2 and 3 N., Rs. 1 and 2 E., corner of; iron post..... | 872.964 |
| Tps. 2 and 3 N., Rs. 1 E. and 1 W., corner of; iron post..... | 892.792 |
| Tps. 2 and 3 N., Rs. 1 and 2 W., corner of; iron post..... | 1,063.402 |
| Tps. 2 and 3 N., Rs. 2 and 3 W., corner of; iron post..... | 1,063.122 |
| Tps. 1 and 2 N., Rs. 2 and 3 W., corner of; iron post..... | 985.612 |
| Tps. 1 and 2 N., Rs. 1 and 2 W., corner of; iron post..... | 941.652 |
| Tps. 1 and 2 N., Rs. 1 E. and 1 W., corner of; iron post..... | 877.342 |
| Tps. 1 and 2 N., Rs. 1 and 2 E., corner of; iron post..... | 841.468 |
| Tps. 1 and 2 N., Rs. 2 and 3 E., corner of; iron post..... | 1,049.678 |
| T. 1 N., Rs. 2 and 3 E., standard corner of; iron post..... | 946.184 |
| T. 1 S., Rs. 2 and 3 E., closing corner of; iron post..... | 938.402 |
| T. 1 N., Rs. 1 and 2 E., standard corner of; iron post..... | 788.783 |
| T. 1 S., Rs. 1 and 2 E., closing corner of; iron post..... | 790.531 |
| Indian meridian and Indian base, 4 feet south of initial point, at intersection of corner of Tps. 1 N. and 1 S., Rs. 1 E. and 1 W.; copper bolt set in rock in place..... | 1,042.137 |
| T. 1 N., Rs. 1 and 2 W., standard corner of; iron post..... | 1070.267 |
| T. 1 S., Rs. 2 and 3 W., closing corner of; iron post..... | 1032.617 |
| T. 1 N., Rs. 2 and 3 W., standard corner of; iron post..... | |

McAlester Quadrangle.

[Latitude 34° 30'–35° ; longitude 95° 30'–96°.]

PITTSBURG COUNTY.

E. L. Faison, G. A. Purington, and H. C. McCluer ran the railroad levels. T. C. Catchings, H. L. Muldrow, jr., F. E. Fellows, E. L. Faison, W. A. Correll, Chase Doster, G. A. Purington, and W. S. D. Moore did the leveling along township lines.

From McAlester, south along Missouri, Kansas & Texas Ry. to Limestone Gap.

| | Feet. |
|---|---------|
| McAlester, 0.5 mile north of, 250 feet north of mile pole 564, in stone culvert; copper bolt..... | 679.386 |
| South McAlester, in northwest angle of Choctaw, Oklahoma & Gulf and Missouri, Kansas & Texas railroads, 49.42 feet west from southwest corner of Union Station; iron post..... | 717.814 |
| South McAlester, on north side of Front Street, in second base stone, 9.7 feet from southwest corner of the Kali-Inla Building, which is owned by the Choctaw, Oklahoma & Gulf R. R. Co.; bronze tablet.. | 724.140 |
| Frink, 60 feet west of track, 50 feet south of mile pole 569, in 14-inch hickory tree; nail..... | 755.083 |
| Kiowa, 50 feet east of track, 200 feet north of mile pole 583, in 30-inch post oak tree; nail..... | 740.392 |
| Limestone Gap, 225 feet west of track, directly behind mile pole 591, in 18-inch elm tree; nail..... | 642.907 |

From Hartshorne along Choctaw, Oklahoma & Gulf R. R. to Barnett.

| | |
|--|---------|
| Bridge 93, in stone on south end of west abutment; square hole..... | 647.442 |
| Hartshorne, in fourth stone above foundation course, at northeast corner of stone building owned by F. M. Savage, on Pennsylvania Avenue, 125 feet west of west line of Fifth Street, 670 feet south of main line of railroad, 2,500 feet east of post-office building; bronze tablet..... | 705.719 |
| Hartshorne, 13 miles west of, 650 feet west of mine No. 1, in north end of culvert; copper bolt..... | 678.075 |
| Hartshorne, 2 miles west of, in stone on north end of parapet wall of bridge 106; copper bolt..... | 608.488 |
| Alderson, in north end of west abutment of bridge 112; copper bolt.. | 682.633 |
| Alderson, 1 mile west of, in stone on south end of west abutment of bridge 117, 75 feet east of mile pole 156; square hole..... | 650.585 |
| Krebs, 0.5 mile west of, in stone on southeast corner of east abutment of bridge 124; square hole..... | 719.948 |
| McAlester, 6 miles west of, on top stone of west pier of bridge 206, 150 feet west of mile pole 145; cross (+) mark..... | 652.632 |
| Barnett, 0.4 mile east of, 550 feet west of mile pole 141, 10 miles west of McAlester, in southwest corner of top stone of west pier of bridge 198; bronze tablet..... | 702.922 |

On St. Louis & San Francisco R. R.

| | |
|--|---------|
| Butler, 4 miles north of, 40 feet west of track, 60 feet north of mile pole 518, near intersection of railroad with base line, in 8-inch red oak tree; nail..... | 515.369 |
|--|---------|

Along township lines.

| | |
|--|---------|
| Tps. 5 and 6 N., Rs. 12 and 13 E., corner of; iron post..... | 705.930 |
| Tps. 5 and 6 N., Rs. 13 and 14 E., corner of; iron post..... | 625.758 |

| | Feet. |
|--|------------|
| Tps. 3 and 4 N., Rs. 4 and 5 W., corner of; iron post----- | 1, 078.802 |
| Tps. 3 and 4 N., Rs. 3 and 4 W., corner of; iron post----- | 1, 155.492 |
| Tps. 2 and 3 N., Rs. 3 and 4 W., corner of; iron post----- | 1, 189.132 |
| Tps. 2 and 3 N., Rs. 4 and 5 W., corner of; iron post----- | 1, 158.645 |
| Tps. 2 and 3 N., Rs. 5 and 6 W., corner of; iron post----- | 1, 304.554 |
| Tps. 2 and 3 N., Rs. 6 and 7 W., corner of; iron post----- | 1, 369.498 |
| Chickasaw Nation, closing corner of Tps. 2 and 3 N., R. 7 W., on west boundary; iron post----- | 1, 272.800 |
| Chickasaw Nation, closing corner of Tps. 1 and 2 N., R. 8 W., on west boundary; iron post----- | 1, 207.698 |
| Tps. 1 and 2 N., Rs. 7 and 8 W., corner of; iron post----- | 1, 224.230 |
| Tps. 1 and 2 N., Rs. 6 and 7 W., corner of; iron post----- | 1, 210.596 |
| Tps. 1 and 2 N., Rs. 5 and 6 W., corner of; iron post----- | 1, 152.754 |
| Tps. 1 and 2 N., Rs. 4 and 5 W., corner of; iron post----- | 1, 112.515 |
| Tps. 1 and 2 N., Rs. 3 and 4 W., corner of; iron post----- | 1, 116.662 |
| T. 1 S., Rs. 3 and 4 W., closing corner of; iron post----- | 1, 007.549 |
| T. 1 N., Rs. 3 and 4 W., standard corner of; iron post----- | 1, 016.701 |
| T. 1 S., Rs. 4 and 5 W., closing corner of; iron post----- | 1, 102.181 |
| T. 1 N., Rs. 4 and 5 W., standard corner of; iron post----- | 1, 102.437 |
| T. 1 S., Rs. 5 and 6 W., closing corner of; iron post----- | 1, 105.984 |
| T. 1 N., Rs. 5 and 6 W., standard corner of; iron post----- | 1, 094.764 |
| T. 1 N., Rs. 6 and 7 W., standard corner of; iron post----- | 1, 225.358 |
| T. 1 S., Rs. 7 and 8 W., closing corner of; iron post----- | 1, 119.669 |
| T. 1 N., Rs. 7 and 8 W., standard corner of; iron post----- | 1, 124.245 |
| Tps. 1 N. and 1 S., R. 8 W., closing corner of, which is intersection of base line and west boundary of Chickasaw Nation; iron post--- | 1, 124.214 |

Chickasha Quadrangle.

[Latitude 35°-35° 30'; longitude 97° 30'-98°.]

CANADIAN AND GRADY COUNTIES.

Robert Coe ran the railroad levels. E. M. Fry did the leveling along township lines. Additional leveling was done in 1907 by F. M. Hutchinson.

From Minco south along Chicago, Rock Island & Pacific Ry. to Chickasha.

| | Feet. |
|--|------------|
| Minco, 1.5 miles south of, at quarter section corner between T. 9 N., R. 7 W., sec. 4, and T. 10 N., R. 7 W., sec. 33, about 150 feet east of track; iron post stamped "1284"----- | 1, 284.850 |
| Minco, 7.5 miles south of, at corner of secs. 32 and 33, T. 9 N., R. 7 W., on second standard parallel north, about 600 feet west of track; iron post stamped "1201"----- | 1, 202.296 |
| Chickasha, 4.5 miles north of, at quarter section corner between T. 7 N., R. 7 W., sec. 4, and T. 8 N., R. 7 W., sec. 33, about 600 feet east of track; iron post stamped "1102"----- | 1, 102.79 |
| Chickasha, corner of Chickasha Avenue and Second Street, in middle of east face of foundation stone at northeast corner of brick building owned by J. C. Griggers; bronze tablet stamped "1091"----- | 1, 091.681 |
| Chickasha, 1.8 miles south of, at quarter section corner between T. 6 N., R. 7 W., sec. 3, and T. 7 N., R. 7 W., sec. 34, about 180 feet west of track; iron post stamped "1084"----- | 1, 084.833 |

¹ Redetermined by Coast and Geodetic Survey precise leveling.

Along township and section lines.

| | Feet. |
|---|-----------|
| Chickasaw Nation, on west boundary of, closing corner of Tps. 9 and 10 N., R. 7 W.; iron post----- | 1,288.234 |
| Tps. 9 and 10 N., Rs. 6 and 7 W., corner of; iron post----- | 1,333.264 |
| Tps. 9 and 10 N., Rs. 5 and 6 W., corner of; iron post----- | 1,307.484 |
| Tps. 9 and 10 N., Rs. 4 and 5 W., corner of; iron post----- | 1,283.364 |
| Canadian River, meander corner on, between T. 9 N., R. 4 W., sec. 1, and T. 10 N., R. 4 W., sec. 38; iron post----- | 1,144.784 |
| Canadian River, meander corner on, between T. 8 N., R. 3 W., sec. 5, and T. 9 N., R. 3 W., sec. 32; iron post----- | 1,111.527 |
| T. 8 N., Rs. 3 and 4 W., closing corner of; iron post----- | 1,177.927 |
| T. 9 N., Rs. 3 and 4 W., standard corner of; iron post----- | 1,181.667 |
| T. 8 N., Rs. 4 and 5 W., closing corner of; iron post----- | 1,284.667 |
| T. 9 N., Rs. 4 and 5 W., standard corner of; iron post----- | 1,291.357 |
| T. 8 N., Rs. 5 and 6 W., closing corner of; iron post----- | 1,289.306 |
| T. 9 N., Rs. 5 and 6 W., standard corner of; iron post----- | 1,300.825 |
| T. 8 N., Rs. 6 and 7 W., closing corner of; iron post----- | 1,223.095 |
| T. 9 N., Rs. 6 and 7 W., standard corner of; iron post----- | 1,207.506 |
| Chickasaw Nation, on west boundary of, closing corner of Tps. 8 and 9 N., R. 7 W.; iron post----- | 1,184.925 |
| Chickasaw Nation, on west boundary of, closing corner of Tps. 7 and 8 N., R. 7 W.; iron post----- | 1,165.92 |
| Tps. 7 and 8 N., Rs. 6 and 7 W., corner of; iron post----- | 1,219.17 |
| Tps. 7 and 8 N., Rs. 5 and 6 W., corner of; iron post----- | 1,214.160 |
| Tps. 7 and 8 N., Rs. 4 and 5 W., corner of; iron post----- | 1,260.947 |
| Tps. 7 and 8 N., Rs. 3 and 4 W., corner of; iron post----- | 1,111.747 |
| Tps. 6 and 7 N., Rs. 3 and 4 W., corner of; iron post----- | 1,219.867 |
| Tps. 6 and 7 N., Rs. 4 and 5 W., corner of; iron post----- | 1,169.427 |
| Tps. 6 and 7 N., Rs. 5 and 6 W., corner of; iron post----- | 1,152.761 |
| Tps. 6 and 7 N., Rs. 6 and 7 W., corner of; iron post----- | 1,079.051 |
| Chickasaw Nation, on west boundary of, closing corner of Tps. 6 and 7 N., R. 7 W.; iron post----- | 1,156.251 |

From point near Oklahoma west along Chicago, Rock Island & Pacific Ry. to Yukon.

| | |
|---|-----------|
| Oklahoma, southwest corner of Broadway and Main Street, in south-east face of third stone above sidewalk, on left side of entrance to Security National Bank (formerly First National Bank); bronze tablet stamped "1199 Okla"----- | 1,199.463 |
| Oklahoma, intersection of railroads northeast of, 60 feet east of Atchison, Topeka & Santa Fe Ry. tracks, 35 feet north of Choctaw, Oklahoma & Gulf R. R. tracks; iron post stamped "1197 Okla"----- | 1,197.771 |
| Oklahoma, crossing of Atchison, Topeka & Santa Fe Ry. and Choctaw, Oklahoma & Gulf R. R.; top of rail----- | 1,198.2 |
| Milepost 26, 24 feet south of railroad track; iron post stamped "1211 Okla"----- | 1,212.122 |
| Milepost 20, 24 feet south of railroad track; iron post stamped "1281 Okla"----- | 1,281.993 |

From Oklahoma north 2.5 miles along Atchison, Topeka & Santa Fe Ry.

| | |
|--|-----------|
| Oklahoma. 100 feet south of southwest corner of Santa Fe and Fourteenth streets; iron post stamped "1231 Okla No. 46"----- | 1,223.884 |
|--|-----------|

| | Feet. |
|--|---------|
| T. 1 N., Rs. 10 and 11 E., standard corner of; iron post----- | 565.379 |
| T. 1 N., Rs. 9 and 10 E., standard corner of; iron post----- | 653.884 |
| T. 1 N., Rs. 8 and 9 E., standard corner of; iron post----- | 650.865 |
| Choctaw-Chickasaw boundary line, closing corner of Tps. 1 N., and 1 S., R. 8 E.; iron post----- | 734.741 |

Along the Chickasaw-Choctaw boundary line.

| | |
|---|---------|
| Tps. 1 and 2 N., R. 8 E., closing corner of Chickasaw Survey; iron post----- | 631.068 |
| Tps. 2 and 3 N., R. 8 E., closing corner of Chickasaw Survey; iron post----- | 730.308 |
| Tps. 3 and 4 N., R. 8 E., closing corner of Chickasaw Survey; iron post----- | 762.347 |
| Tps. 4 and 5 N., R. 8 E., closing corner of Chickasaw Survey; iron post----- | 779.795 |

Stonewall Quadrangle.

[Latitude 34° 30'-35°; longitude 96° 30'-97°.]

PONTOTOC COUNTY.

The leveling was done by W. R. Manning, W. S. D. Moore, J. P. Walker, E. M. Fry, E. T. King, and H. L. Muldrow, jr.

Along township and section lines.

| | Feet. |
|--|-----------|
| Canadian River, meander corner on, between T. 5 N., R. 3 E., sec. 2, and T. 6 N., R. 3 E., sec. 35; iron post----- | 918.66 |
| Canadian River, meander corner on, between T. 6 N., R. 3 E., sec. 25, and T. 6 N., R. 4 E., sec. 30; iron post----- | 907.28 |
| Tps. 5 and 6 N., Rs. 3 and 4 E., corner of; iron post----- | 1,027.43 |
| Canadian River, meander corner on, between T. 5 N., R. 4 E., sec. 5, and T. 6 N., R. 4 E., sec. 32; iron post----- | 898.85 |
| Canadian River, meander corner on, between T. 5 N., R. 4 E., sec. 1, and T. 5 N., R. 5 E., sec. 6; iron post----- | 880.794 |
| Seminole-Oklahoma boundary, closing corner on, between fractional Tps. 5 and 6 N., R. 5 E.; iron post----- | 1,056.695 |
| Tps. 5 and 6 N., Rs. 5 and 6 E., corner of; iron post----- | 931.989 |
| Tps. 5 and 6 N., Rs. 6 and 7 E., corner of; iron post----- | 891.552 |
| Tps. 5 and 6 N., Rs. 7 and 8 E., corner of; iron post----- | 852.683 |
| T. 5 N., Rs. 7 and 8 E., standard corner of; iron post----- | 920.331 |
| T. 4 N., Rs. 7 and 8 E., closing corner of; iron post----- | 949.576 |
| T. 5 N., Rs. 6 and 7 E., standard corner of; iron post----- | 957.867 |
| T. 4 N., Rs. 6 and 7 E., closing corner of; iron post----- | 948.223 |
| T. 5 N., Rs. 5 and 6 E., standard corner of; iron post----- | 898.745 |
| T. 4 N., Rs. 5 and 6 E., closing corner of; iron post----- | 896.069 |
| T. 5 N., Rs. 4 and 5 E., standard corner of; iron post----- | 1,001.868 |
| T. 4 N., Rs. 4 and 5 E., closing corner of; iron post----- | 1,008.824 |
| T. 5 N., Rs. 3 and 4 E., standard corner of; iron post----- | 1,096.94 |
| T. 4 N., Rs. 3 and 4 E., closing corner of; iron post----- | 1,083.925 |
| Tps. 3 and 4 N., Rs. 3 and 4 E., corner of; iron post----- | 1,085.302 |
| Tps. 3 and 4 N., Rs. 4 and 5 E., corner of; iron post----- | 976.885 |
| Tps. 3 and 4 N., Rs. 5 and 6 E., corner of; iron post----- | 934.219 |

| | Feet. |
|---|-----------|
| Tps. 3 and 4 N., Rs. 6 and 7 E., corner of; iron post..... | 968.648 |
| Tps. 3 and 4 N., Rs. 7 and 8 E., corner of; iron post..... | 845.572 |
| Tps. 2 and 3 N., Rs. 7 and 8 E., corner of; iron post..... | 753.493 |
| Tps. 2 and 3 N., Rs. 6 and 7 E., corner of; iron post..... | 752.477 |
| Tps. 2 and 3 N., Rs. 5 and 6 E., corner of; iron post..... | 1,051.052 |
| Tps. 2 and 3 N., Rs. 4 and 5 E., corner of; iron post..... | 1,171.605 |
| Tps. 2 and 3 N., Rs. 3 and 4 E., corner of; iron post..... | 1,170.524 |
| Tps. 1 and 2 N., Rs. 3 and 4 E., corner of; iron post..... | 1,080.938 |
| Tps. 1 and 2 N., Rs. 4 and 5 E., corner of; iron post..... | 1,255.431 |
| Tps. 1 and 2 N., Rs. 5 and 6 E., corner of; iron post..... | 1,141.508 |
| Tps. 1 and 2 N., Rs. 6 and 7 E., corner of; iron post..... | 824.716 |
| Tps. 1 and 2 N., Rs. 7 and 8 E., corner of; iron post..... | 747.122 |
| T. 1 N., Rs. 7 and 8 E., standard corner of; iron post..... | 795.223 |
| T. 1 N., Rs. 6 and 7 E., standard corner of; iron post..... | 1,063.658 |
| T. 1 N., Rs. 5 and 6 E., standard corner of; iron post..... | 1,100.691 |
| T. 1 N., Rs. 4 and 5 E., standard corner of; iron post..... | 1,161.841 |
| T. 1 S., Rs. 4 and 5 E., closing corner of; iron post..... | 1,157.909 |
| T. 1 N., Rs. 3 and 4 E., standard corner of; iron post..... | 1,200.234 |
| T. 1 S., Rs. 3 and 4 E., closing corner of; iron post..... | 1,196.88 |

From Asher southwest to Canadian River.

| | Feet. |
|---|---------|
| Asher, south of railroad station, T. 6 N., R. 4 E., secs. 18 and 19, about 100 feet east of township line, in south fence line; iron post stamped "957 Adj 1903"..... | 954.969 |
| Wanette, 4.0 miles east of, T. 6 N., R. 3 E., corner of secs. 22, 23, 26, and 27, near southeast fence corner; iron post stamped "967 Adj 1903"..... | 965.352 |
| Tps. 5 and 6 N., R. 3 E., corner of secs. 33, 34, 3, and 4, near north-west fence corner; iron post stamped "1000 Adj 1903"..... | 998.567 |

Pauls Valley Quadrangle.

[Latitude, 34° 30'-35°; longitude, 97°-97° 30'.]

GARVIN AND McCLAIN COUNTIES.

Robert Coe and A. F. Hassan ran the railroad levels. W. R. Manning, W. S. D. Moore, G. Given, E. M. Fry, and J. H. Carlock did the leveling along township and section lines.

From Davis north along Gulf, Colorado & Santa Fe Ry. to Wayne.

| | Feet. |
|---|---------|
| Davis, 0.25 mile north of, at intersection of Indian base line with line of telegraph poles adjacent to railroad, about 28 feet west of center of track, 48 feet north of tenth telegraph pole north of mile pole 478; iron post..... | 840.434 |
| Wynnewood, 3.5 miles south of, at intersection of railroad with north boundary of T. 1 N., R. 1 E., 24 feet west of center of track, in line with telegraph poles; iron post..... | 822.317 |
| Wynnewood, on Cherokee Street and Guy Avenue, in foundation stone of Citizens Bank Building, 12 feet south of northeast corner of building; bronze tablet..... | 864.616 |
| Wynnewood, 2.75 miles north of, at intersection of railroad with north boundary of T. 2 N., R. 1 E., 33 feet west of center of track, in line with telegraph poles, about 3 poles south of mile pole 491; iron post..... | 845.282 |

Feet.

| | |
|---|----------|
| Pauls Valley, at corner of Paul and Santa Fe avenues, in center of east face of second stone above foundation of northeast corner of stone building owned by C. J. Grant; bronze tablet----- | 873. 182 |
| Pauls Valley, 2.5 miles northwest of, Tps. 3 and 4 N., Rs. 1 E. and 1 W., about 900 feet west of railroad; iron post----- | 884. 772 |
| Paoli, 2 miles north of, at witness corner to quarter section corner of sec. 36, T. 5 N., R. 1 W., 300 feet east of intersection of railroad with first standard parallel north; iron post----- | 935. 189 |

Along township and section lines.

| | |
|---|-------------|
| Tps. 5 and 6 N., Rs. 2 and 3 W., corner of; iron post----- | 1, 077. 851 |
| Tps. 5 and 6 N., Rs. 1 and 2 W., corner of; iron post----- | 1, 121. 411 |
| Tps. 5 and 6 N., Rs. 1 E. and 1 W., corner of; iron post----- | 990. 561 |
| Canadian River, meander corner on, T. 6 N., Rs. 1 E. and 1 W., secs. 31 and 36; iron post----- | 990. 041 |
| Canadian River, meander corner on, between T. 5 N., R. 1 E., sec. 1, and T. 5 N., R. 2 E., sec. 6; iron post----- | 969. 577 |
| Canadian River, meander corner on, between T. 5 N., R. 2 E., sec. 13, and T. 5 N., R. 3 E., sec. 18; iron post----- | 939. 053 |
| T. 5 N., Rs. 2 and 3 E., standard corner of; iron post----- | 1, 023. 873 |
| T. 4 N., Rs. 2 and 3 E., closing corner of; iron post----- | 1, 015. 892 |
| T. 5 N., Rs. 1 and 1 E., standard corner of; iron post----- | 1, 065. 907 |
| T. 4 N., Rs. 1 and 2 E., closing corner of; iron post----- | 1, 054. 255 |
| Indian meridian, standard corner of Tps. 4 and 5 N., Rs. 1 E. and 1 W., at intersection with first standard parallel north; iron post---- | 949. 571 |
| T. 4 N., Rs. 1 and 2 W., closing corner of; iron post----- | 1, 025. 479 |
| T. 5 N., Rs. 1 and 2 W., standard corner of; iron post----- | 1, 013. 619 |
| T. 4 N., Rs. 2 and 3 W., closing corner of; iron post----- | 982. 159 |
| T. 5 N., Rs. 2 and 3 W., standard corner of; iron post----- | 988. 349 |
| Tps. 3 and 4 N., Rs. 2 and 3 W., corner of; iron post----- | 990. 152 |
| Tps. 3 and 4 N., Rs. 1 and 2 W., corner of; iron post----- | 979. 892 |
| Tps. 3 and 4 N., Rs. 1 and 2 E., corner of; iron post----- | 922. 582 |
| Tps. 3 and 4 N., Rs. 2 and 3 E., corner of; iron post----- | 1, 042. 562 |
| Tps. 2 and 3 N., Rs. 2 and 3 E., corner of; iron post----- | 1, 106. 464 |
| Tps. 2 and 3 N., Rs. 1 and 2 E., corner of; iron post----- | 872. 954 |
| Tps. 2 and 3 N., Rs. 1 E. and 1 W., corner of; iron post----- | 892. 792 |
| Tps. 2 and 3 N., Rs. 1 and 2 W., corner of; iron post----- | 1, 053. 402 |
| Tps. 2 and 3 N., Rs. 2 and 3 W., corner of; iron post----- | 1, 003. 122 |
| Tps. 1 and 2 N., Rs. 2 and 3 W., corner of; iron post----- | 985. 612 |
| Tps. 1 and 2 N., Rs. 1 and 2 W., corner of; iron post----- | 941. 652 |
| Tps. 1 and 2 N., Rs. 1 E. and 1 W., corner of; iron post----- | 877. 342 |
| Tps. 1 and 2 N., Rs. 1 and 2 E., corner of; iron post----- | 841. 468 |
| Tps. 1 and 2 N., Rs. 2 and 3 E., corner of; iron post----- | 1, 049. 678 |
| T. 1 N., Rs. 2 and 3 E., standard corner of; iron post----- | 946. 134 |
| T. 1 S., Rs. 2 and 3 E., closing corner of; iron post----- | 938. 402 |
| T. 1 N., Rs. 1 and 2 E., standard corner of; iron post----- | 788. 783 |
| T. 1 S., Rs. 1 and 2 E., closing corner of; iron post----- | 790. 531 |
| Indian meridian and Indian base, 4 feet south of initial point, at intersection of corner of Tps. 1 N. and 1 S., Rs. 1 E. and 1 W.; copper bolt set in rock in place----- | 1, 042. 137 |
| T. 1 N., Rs. 1 and 2 W., standard corner of; iron post----- | 969. 267 |
| T. 1 S., Rs. 2 and 3 W., closing corner of; iron post----- | 932. 617 |
| T. 1 N., Rs. 2 and 3 W., standard corner of; iron post----- | 927. 147 |

Rush Springs Quadrangle.

[Latitude 34° 30'–35°; longitude 97° 30'–98°.]

GARVIN, GRADY, AND STEPHENS COUNTIES.

The railroad levels were run by Robert Coe. E. M. Fry, W. S. D. Moore, J. P. Thayer, J. P. Walker, H. L. Baker, and W. R. Manning did the leveling along township lines.

From Minnehah south along Chicago, Rock Island & Pacific Ry. to Duncan.

| | Feet. |
|--|-------------|
| Rush Springs, 6 miles north of, on first standard parallel north, between T. 4 N., R. 7 W., sec. 4, and T. 5 N., R. 7 W., sec. 33, 37.9 feet west of track, 15.3 feet south of 20th telegraph pole north of mile pole 451; iron post, 10 inches out of ground, stamped "1292"----- | 1, 292. 501 |
| Rush Springs, 1 mile north of township line, in middle of northeast face of second stone above sidewalk on left side of main entrance to Masonic Building; bronze tablet stamped "1349"----- | 1, 349. 902 |
| Marlow, 2.5 miles north of, at section corner between T. 2 N., R. 7 W., secs. 5 and 4, and T. 3 N., R. 7 W., secs. 32 and 33, 50 feet west of track; iron post stamped "1331"----- | 1, 331. 989 |
| Marlow, 3.75 miles south of, at section corner between T. 1 N., R. 7 W., secs. 4 and 5, and T. 2 N., R. 7 W., secs. 32 and 33, 730 feet east of track; iron post----- | 1, 305. 080 |
| Duncan, 0.3 mile north of, on Indian base line, at quarter section corner between T. 1 N., R. 7 W., sec. 32, and T. 1 S., R. 7 W., sec. 5, 1,000 feet west of track; iron post stamped "1127"----- | 1, 127. 639 |

Along township lines.

| | |
|---|-------------|
| Chickasaw Nation, closing corner of Tps. 5 and 6 N., R. 7 W., on the west boundary of; iron post----- | 1, 096. 028 |
| Tps. 5 and 6 N., Rs. 6 and 7 W., corner of; iron post----- | 1, 163. 078 |
| Tps. 5 and 6 N., Rs. 5 and 6 W., corner of; iron post----- | 1, 019. 568 |
| Tps. 5 and 6 N., Rs. 4 and 5 W., corner of; iron post----- | 1, 140. 081 |
| Tps. 5 and 6 N., Rs. 3 and 4 W., corner of; iron post----- | 1, 010. 871 |
| T. 4 N., Rs. 3 and 4 W., closing corner of; iron post----- | 964. 219 |
| T. 5 N., Rs. 3 and 4 W., standard corner of; iron post----- | 963. 769 |
| T. 4 N., Rs. 4 and 5 W., closing corner of; iron post----- | 995. 85 |
| T. 5 N., Rs. 4 and 5 W., standard corner of; iron post----- | 995. 59 |
| T. 4 N., Rs. 5 and 6 W., closing corner of; iron post----- | 1, 096. 847 |
| T. 5 N., Rs. 5 and 6 W., standard corner of; iron post----- | 1, 125. 028 |
| T. 4 N., Rs. 6 and 7 W., closing corner of; iron post----- | 1, 234. 623 |
| T. 5 N., Rs. 6 and 7 W., standard corner of; iron post----- | 1, 281. 216 |
| Chickasaw Nation, closing corner of Tps. 4 and 5 N., R. 7 W., on the west boundary; iron post----- | 1, 296. 883 |
| Chickasaw Nation, closing corner of Tps. 3 and 4 N., R. 7 W., on west boundary; iron post----- | 1, 390. 078 |
| Tps. 3 and 4 N., Rs. 6 and 7 W., corner of; iron post----- | 1, 290. 909 |
| Tps. 3 and 4 N., Rs. 5 and 6 W., corner of; iron post----- | 1, 266. 648 |

¹ Redetermined by Coast and Geodetic Survey.

| | Feet. |
|---|------------|
| Tps. 3 and 4 N., Rs. 4 and 5 W., corner of; iron post | 1, 078.802 |
| Tps. 3 and 4 N., Rs. 3 and 4 W., corner of; iron post | 1, 155.492 |
| Tps. 2 and 3 N., Rs. 3 and 4 W., corner of; iron post | 1, 189.132 |
| Tps. 2 and 3 N., Rs. 4 and 5 W., corner of; iron post | 1, 158.645 |
| Tps. 2 and 3 N., Rs. 5 and 6 W., corner of; iron post | 1, 304.554 |
| Tps. 2 and 3 N., Rs. 6 and 7 W., corner of; iron post | 1, 369.498 |
| Chickasaw Nation, closing corner of Tps. 2 and 3 N., R. 7 W., on west boundary; iron post | 1, 272.800 |
| Chickasaw Nation, closing corner of Tps. 1 and 2 N., R. 8 W., on west boundary; iron post | 1, 207.866 |
| Tps. 1 and 2 N., Rs. 7 and 8 W., corner of; iron post | 1, 224.280 |
| Tps. 1 and 2 N., Rs. 6 and 7 W., corner of; iron post | 1, 210.596 |
| Tps. 1 and 2 N., Rs. 5 and 6 W., corner of; iron post | 1, 152.754 |
| Tps. 1 and 2 N., Rs. 4 and 5 W., corner of; iron post | 1, 112.515 |
| Tps. 1 and 2 N., Rs. 3 and 4 W., corner of; iron post | 1, 116.682 |
| T. 1 S., Rs. 3 and 4 W., closing corner of; iron post | 1, 007.549 |
| T. 1 N., Rs. 3 and 4 W., standard corner of; iron post | 1, 016.701 |
| T. 1 S., Rs. 4 and 5 W., closing corner of; iron post | 1, 102.181 |
| T. 1 N., Rs. 4 and 5 W., standard corner of; iron post | 1, 102.437 |
| T. 1 S., Rs. 5 and 6 W., closing corner of; iron post | 1, 105.984 |
| T. 1 N., Rs. 5 and 6 W., standard corner of; iron post | 1, 094.764 |
| T. 1 N., Rs. 6 and 7 W., standard corner of; iron post | 1, 225.358 |
| T. 1 S., Rs. 7 and 8 W., closing corner of; iron post | 1, 119.060 |
| T. 1 N., Rs. 7 and 8 W., standard corner of; iron post | 1, 124.245 |
| Tps. 1 N. and 1 S., R. 8 W., closing corner of, which is intersection of base line and west boundary of Chickasaw Nation; iron post | 1, 124.214 |

Chickasha Quadrangle.

[Latitude 35°-35° 30'; longitude 97° 30'-98°.]

CANADIAN AND GRADY COUNTIES.

Robert Coe ran the railroad levels. E. M. Fry did the leveling along township lines. Additional leveling was done in 1907 by F. M. Hutchinson.

From Minco south along Chicago, Rock Island & Pacific Ry. to Chickasha.

| | Feet. |
|---|------------|
| Minco, 1.5 miles south of, at quarter section corner between T. 9 N., R. 7 W., sec. 4, and T. 10 N., R. 7 W., sec. 33, about 150 feet east of track; iron post stamped "1284" | 1, 284.850 |
| Minco, 7.5 miles south of, at corner of secs. 32 and 33, T. 9 N., R. 7 W., on second standard parallel north, about 600 feet west of track; iron post stamped "1201" | 1, 202.296 |
| Chickasha, 4.5 miles north of, at quarter section corner between T. 7 N., R. 7 W., sec. 4, and T. 8 N., R. 7 W., sec. 33, about 600 feet east of track; iron post stamped "1102" | 1, 102.79 |
| Chickasha, corner of Chickasha Avenue and Second Street, in middle of east face of foundation stone at northeast corner of brick building owned by J. C. Griggers; bronze tablet stamped "1091" | 1, 091.681 |
| Chickasha, 1.8 miles south of, at quarter section corner between T. 6 N., R. 7 W., sec. 3, and T. 7 N., R. 7 W., sec. 34, about 180 feet west of track; iron post stamped "1084" | 1, 084.853 |

¹ Redetermined by Coast and Geodetic Survey precise leveling.

Along township and section lines.

| | Feet. |
|---|-------------|
| Chickasaw Nation, on west boundary of, closing corner of Tps. 9 and 10 N., R. 7 W.; iron post----- | 1, 288. 234 |
| Tps. 9 and 10 N., Rs. 6 and 7 W., corner of; iron post----- | 1, 333. 264 |
| Tps. 9 and 10 N., Rs. 5 and 6 W., corner of; iron post----- | 1, 307. 484 |
| Tps. 9 and 10 N., Rs. 4 and 5 W., corner of; iron post----- | 1, 283. 364 |
| Canadian River, meander corner on, between T. 9 N., R. 4 W., sec. 1, and T. 10 N., R. 4 W., sec. 36; iron post----- | 1, 144. 784 |
| Canadian River, meander corner on, between T. 8 N., R. 3 W., sec. 5, and T. 9 N., R. 3 W., sec. 32; iron post----- | 1, 111. 527 |
| T. 8 N., Rs. 3 and 4 W., closing corner of; iron post----- | 1, 177. 927 |
| T. 9 N., Rs. 3 and 4 W., standard corner of; iron post----- | 1, 181. 667 |
| T. 8 N., Rs. 4 and 5 W., closing corner of; iron post----- | 1, 284. 667 |
| T. 9 N., Rs. 4 and 5 W., standard corner of; iron post----- | 1, 291. 357 |
| T. 8 N., Rs. 5 and 6 W., closing corner of; iron post----- | 1, 289. 305 |
| T. 9 N., Rs. 5 and 6 W., standard corner of; iron post----- | 1, 300. 825 |
| T. 8 N., Rs. 6 and 7 W., closing corner of; iron post----- | 1, 223. 095 |
| T. 9 N., Rs. 6 and 7 W., standard corner of; iron post----- | 1, 207. 505 |
| Chickasaw Nation, on west boundary of, closing corner of Tps. 8 and 9 N., R. 7 W.; iron post----- | 1, 184. 925 |
| Chickasaw Nation, on west boundary of, closing corner of Tps. 7 and 8 N., R. 7 W.; iron post----- | 1, 165. 92 |
| Tps. 7 and 8 N., Rs. 6 and 7 W., corner of; iron post----- | 1, 219. 17 |
| Tps. 7 and 8 N., Rs. 5 and 6 W., corner of; iron post----- | 1, 214. 160 |
| Tps. 7 and 8 N., Rs. 4 and 5 W., corner of; iron post----- | 1, 260. 947 |
| Tps. 7 and 8 N., Rs. 3 and 4 W., corner of; iron post----- | 1, 111. 747 |
| Tps. 6 and 7 N., Rs. 3 and 4 W., corner of; iron post----- | 1, 219. 867 |
| Tps. 6 and 7 N., Rs. 4 and 5 W., corner of; iron post----- | 1, 169. 427 |
| Tps. 6 and 7 N., Rs. 5 and 6 W., corner of; iron post----- | 1, 152. 761 |
| Tps. 6 and 7 N., Rs. 6 and 7 W., corner of; iron post----- | 1, 079. 051 |
| Chickasaw Nation, on west boundary of, closing corner of Tps. 6 and 7 N., R. 7 W.; iron post----- | 1, 156. 251 |

From point near Oklahoma west along Chicago, Rock Island & Pacific Ry. to Yukon.

| | |
|--|-------------|
| Oklahoma, southwest corner of Broadway and Main Street, in southeast face of third stone above sidewalk, on left side of entrance to Security National Bank (formerly First National Bank); bronze tablet stamped "1199 Okla"----- | 1, 199. 463 |
| Oklahoma, intersection of railroads northeast of, 60 feet east of Atchison, Topeka & Santa Fe Ry. tracks, 35 feet north of Choc-taw, Oklahoma & Gulf R. R. tracks; iron post stamped "1197 Okla"----- | 1, 197. 771 |
| Oklahoma, crossing of Atchison, Topeka & Santa Fe Ry. and Choc-taw, Oklahoma & Gulf R. R.; top of rail----- | 1, 198. 2 |
| Milepost 26, 24 feet south of railroad track; iron post stamped "1211 Okla"----- | 1, 212. 122 |
| Milepost 20, 24 feet south of railroad track; iron post stamped "1231 Okla"----- | 1, 281. 993 |

From Oklahoma north 2.5 miles along Atchison, Topeka & Santa Fe Ry.

| | |
|---|-------------|
| Oklahoma, 100 feet south of southwest corner of Santa Fe and Four-teenth streets; iron post stamped "1231 Okla No. 46"----- | 1, 229. 884 |
|---|-------------|

From Oklahoma south along Atchison, Topeka & Santa Fe Ry. 4 miles to point near Flynn.

| | Feet. |
|---|-----------|
| T. 11 N., R. 3 W., 45 feet southeast of northwest corner of sec. 10; iron post stamped "1179 Okla. No. 25"----- | 1,178.154 |
| T. 11 N., R. 3 W., line between secs. 10 and 15, 60 feet east and 30 feet south of; iron post stamped "1204 Okla. No. 26"----- | 1,203.62 |

Seminole Quadrangle, comprising Maud, Prague, Seminole, and Shawnee 1/2 quadrangles.

[Latitude 35°-35° 30'; longitude 96° 30'-97°.]

POTTAWATOMIE AND SEMINOLE COUNTIES.

The railroad levels were run by E. L. Faison. W. S. D. Moore, W. R. Manning, and E. L. Faison did the leveling along township lines.

From Wewoka along Choctaw, Oklahoma & Gulf R. R. to Shawnee.

| | Feet. |
|---|-----------|
| Wewoka, 9 miles west of, 5.7 feet west of mile pole 90; iron post----- | 839.87 |
| Earlsboro, 17 feet west of main track, 200 feet north of station building; iron post----- | 1,026.038 |
| Shawnee, 15 feet north of track, at east end of station platform; iron post----- | 1,041.908 |
| Shawnee, 4 miles west of, near Dale, at mile pole 66; iron post----- | 1,019.450 |

Along township lines.

| | |
|---|-----------|
| Creek-Oklahoma boundary, closing corner of, Tps. 11 and 12 N. R. 6 E.; iron post----- | 980.680 |
| Tps. 11 and 12 N., Rs. 6 and 7 E., corner of; iron post----- | 923.073 |
| Tps. 11 and 12 N., Rs. 7 and 8 E., corner of; iron post----- | 938.815 |
| Tps. 10 and 11 N., Rs. 7 and 8 E., corner of; iron post----- | 990.474 |
| Tps. 10 and 11 N., Rs. 6 and 7 E., corner of; iron post----- | 903.175 |
| Tps. 10 and 11 N., Rs. 5 and 6 E., corner of; iron post----- | 990.910 |
| Seminole-Oklahoma boundary, closing corner of Tps. 10 and 11 N., R. 5 E.; iron post----- | 947.422 |
| Seminole-Oklahoma boundary, closing corner of Tps. 9 and 10 N., R. 5 E.; iron post----- | 995.171 |
| Tps. 9 and 10 N., Rs. 5 and 6 E., corner of; iron post----- | 1,019.257 |
| Tps. 9 and 10 N., Rs. 6 and 7 E., corner of; iron post----- | 997.229 |
| Tps. 9 and 10 N., Rs. 7 and 8 E., corner of; iron post----- | 991.938 |
| T. 9 N., Rs. 7 and 8 E., standard corner of; iron post----- | 819.467 |
| T. 9 N., Rs. 6 and 7 E., standard corner of; iron post----- | 854.518 |
| T. 8 N., Rs. 6 and 7 E., closing corner of; iron post----- | 895.218 |
| T. 9 N., Rs. 5 and 6 E., standard corner of; iron post----- | 945.441 |
| T. 8 N., Rs. 5 and 6 E., closing corner of; iron post----- | 916.992 |
| Seminole-Oklahoma boundary, closing corner of Tps. 8 and 9 N., R. 5 E.; iron post----- | 931.54 |
| Seminole-Oklahoma boundary, closing corner of Tps. 7 and 8 N., R. 5 E.; iron post----- | 892.088 |
| Tps. 7 and 8 N., Rs. 5 and 6 E., corner of; iron post----- | 903.109 |
| Tps. 7 and 8 N., Rs. 6 and 7 E., corner of; iron post----- | 894.061 |
| Tps. 7 and 8 N., Rs. 7 and 8 E., corner of; iron post----- | 958.085 |

| | Feet. |
|--|-----------|
| Tps. 6 and 7 N., Rs. 7 and 8 E., corner of; iron post----- | 885.93 |
| Tps. 6 and 7 N., Rs. 6 and 7 E., corner of; iron post----- | 850.219 |
| Tps. 6 and 7 N., Rs. 5 and 6 E., corner of; iron post----- | 951.052 |
| Seminole-Oklahoma boundary, closing corner of Tps. 5 and 6 N., R. 5 E.; iron post----- | 1,056.695 |

Sac and Fox 30' Quadrangle (comprising Agra, Chandler, Mallon, and Sac and Fox 15' quadrangles).

[Latitude 35° 30'–36°; longitude 96° 30'–97°.]

LINCOLN COUNTY.

The level work in this quadrangle was done by W. R. Manning and E. L. Faison.

Along township lines.

| | Feet. |
|--|---------|
| Creek-Oklahoma boundary, closing corner of Tps. 17 and 18 N., R. 6 E.; iron post----- | 830.313 |
| Tps. 17 and 18 N., Rs. 6 and 7 E., corner of; in sandstone post, 48 by 8 by 6 inches, 45 inches in the ground; bronze tablet----- | 840.155 |
| Tps. 17 and 18 N., Rs. 7 and 8 E., corner of; iron post----- | 921.435 |
| T. 17 N., Rs. 7 and 8 E., standard corner of; iron post----- | 949.307 |
| T. 16 N., Rs. 7 and 8 E., closing corner of; iron post----- | 956.793 |
| T. 16 N., Rs. 6 and 7 E., closing corner of; iron post----- | 962.832 |
| Creek-Oklahoma boundary, standard corner of T. 17 N., Rs. 6 and 7 E. (which is also closing corner of Tps. 16 and 17 N., R. 6); iron post----- | 977.295 |
| Creek-Oklahoma boundary, closing corner of Tps. 15 and 16 N., R. 6 E.; iron post----- | 835.402 |
| Tps. 15 and 16 N., Rs. 6 and 7 E., corner of; iron post----- | 844.658 |
| Tps. 15 and 16 N., Rs. 7 and 8 E., corner of; iron post----- | 815.15 |
| Tps. 14 and 15 N., Rs. 7 and 8 E., corner of; iron post----- | 765.915 |
| Tps. 14 and 15 N., Rs. 6 and 7 E., corner of; iron post----- | 878.491 |
| Creek-Oklahoma boundary, closing corner of Tps. 14 and 15 N., R. 6 E.; iron post----- | 861.016 |
| Creek-Oklahoma boundary, closing corner of Tps. 13 and 14 N., R. 6 E.; iron post----- | 788.57 |
| Tps. 13 and 14 N., Rs. 6 and 7 E., corner of; iron post----- | 784.411 |
| Tps. 13 and 14 N., Rs. 7 and 8 E., corner of; iron post----- | 774.044 |
| T. 13 N., Rs. 7 and 8 E., standard corner of; iron post----- | 862.455 |
| T. 13 N., Rs. 6 and 7 E., standard corner of; iron post----- | 868.482 |
| Creek-Oklahoma boundary, closing corner of Tps. 12 and 13 N., R. 6 E.----- | 867.11 |

Pawnee Quadrangle.

[Latitude 36°–36° 30'; longitude 96° 30'–97°.]

PAWNEE AND PAYNE COUNTIES.

This bench mark was established by W. R. Manning on a double-rodged line.

| | Feet. |
|---|---------|
| T. 18 N., R. 6 E., corner of secs. 13 and 24, and T. 18 N., R. 7 E., corner of secs. 18 and 19, sandstone post, 35 by 6 by 6 inches; bronze tablet----- | 780.287 |

¹ Redetermined by E. T. King in 1905.

Hominy Quadrangle.

[Latitude 36°-36° 30'; longitude 96°-96° 30'.]

CREEK, OSAGE, AND TULSA COUNTIES.

C. B. Odell ran the levels along the railroad, and he also had charge of an independent level party on township lines.

Along St. Louis & San Francisco R. R. from Red Fork to Sapulpa.

| | Feet. |
|--|----------|
| Red Fork, 3 miles south of, cut in capstone of south pier of bridge over Nickle Creek; square hole..... | 731. 101 |
| Sapulpa, into wall of Gladstone Hotel, 14 feet from east end and 3.5 feet above porch; bronze tablet..... | 725. 749 |
| Sapulpa, in sandstone post, 9 by 9 by 20 inches, buried flush with surface of ground, 11.5 feet from northwest corner of station; copper bolt..... | 721. 391 |

Along township lines.

| | |
|---|----------|
| Creek-Oklahoma boundary, closing corner of T. 19 N., Rs. 11 and 12 E.; iron post..... | 739. 981 |
| Tps. 18 and 19 N., Rs. 11 and 12 E., corner of; iron post..... | 749. 431 |

Addington Quadrangle.

[Latitude 34°-34° 30'; longitude 97° 30'-98°.]

JEFFERSON AND STEPHENS COUNTIES.

The railroad levels were run by Robert Coe, who also had an independent party to run levels on the first standard parallel south. J. P. Walker, H. L. Baker, R. T. Carnall, R. Coe, and E. M. Fry did the leveling along township lines.

From Comanche south along Chicago, Rock Island & Pacific Ry. to Ryan.

| | Feet. |
|--|-----------------------|
| Comanche, south of station building, between the platform and a telegraph pole; iron post..... | 980. 023 |
| Addington, in the northwest corner of top stone of north foundation and in second tier from front of water tank; square hole..... | 917. 955 |
| Addington, 4.5 miles south of, in coping stone on west end of south pier of bridge 3202 over Cow Creek, about 1,100 feet north of mile pole 499; square hole..... | ¹ 883. 614 |
| Sugden, 0.5 mile south of standard corner of T. 5 S., Rs. 7 and 8 W., about 1,600 feet west of intersection of railroad with first standard parallel south; iron post..... | ¹ 844. 352 |
| Ryan, 1 mile north of, on outside anchor bolt on west side of south pier of bridge 3212 over Beaver Creek..... | ¹ 827. 525 |

Along township lines.

| | |
|---|-------------|
| Chickasaw Nation, west boundary of, closing corner of fractional Tps. 1 and 2 S., R. 8 W.; iron post..... | 1, 096. 255 |
| Tps. 1 and 2 S., Rs. 7 and 8 W., corner of; iron post..... | 1, 123. 575 |
| Tps. 1 and 2 S., Rs. 6 and 7 W., corner of; iron post..... | 1, 127. 800 |
| Tps. 1 and 2 S., Rs. 5 and 6 W., corner of; iron post..... | 1, 082. 180 |

¹ Redetermined by Coast and Geodetic Survey.

| | Feet. |
|--|-------------|
| Tps. 1 and 2 S., Rs. 4 and 5 W., corner of; iron post..... | 1, 218. 530 |
| Tps. 1 and 2 S., Rs. 3 and 4 W., corner of; iron post..... | 1, 084. 979 |
| Tps. 2 and 3 S., Rs. 3 and 4 W., corner of; iron post..... | 1, 056. 532 |
| Tps. 2 and 3 S., Rs. 4 and 5 W., corner of; iron post..... | 967. 309 |
| Tps. 2 and 3 S., Rs. 5 and 6 W., corner of; iron post..... | 931. 839 |
| Tps. 2 and 3 S., Rs. 6 and 7 W., corner of; iron post..... | 988. 069 |
| Tps. 2 and 3 S., Rs. 7 and 8 W., corner of; iron post..... | 1, 062. 569 |
| Chickasaw Nation, west boundary of, closing corner of fractional Tps. 2 and 3 S., R. 8 W.; iron post..... | 1, 005. 699 |
| Chickasaw Nation, west boundary of, closing corner of fractional Tps. 3 and 4 S., R. 8 W.; iron post..... | 970. 45 |
| Tps. 3 and 4 S., Rs. 7 and 8 W., corner of; iron post..... | 908. 59 |
| Tps. 3 and 4 S., Rs. 6 and 7 W., corner of; iron post..... | 969. 52 |
| Tps. 3 and 4 S., Rs. 5 and 6 W., corner of; iron post..... | 857. 17 |
| Tps. 3 and 4 S., Rs. 4 and 5 W., corner of; iron post..... | 975. 27 |
| Tps. 3 and 4 S., Rs. 3 and 4 W., corner of; iron post..... | 1, 038. 589 |
| Tps. 4 and 5 S., Rs. 3 and 4 W., corner of; iron post..... | 848. 547 |
| Tps. 4 and 5 S., Rs. 4 and 5 W., corner of; iron post..... | 820. 407 |
| Tps. 4 and 5 S., Rs. 5 and 6 W., corner of; iron post..... | 900. 277 |
| Tps. 4 and 5 S., Rs. 6 and 7 W., corner of; iron post..... | 894. 499 |
| Tps. 4 and 5 S., Rs. 7 and 8 W., corner of; iron post..... | 945. 746 |
| T. 5 S., Rs. 6 and 7 W., standard corner of; iron post..... | 913. 525 |
| T. 5 S., Rs. 5 and 6 W., standard corner of; iron post..... | 846. 510 |
| T. 5 S., Rs. 4 and 5 W., standard corner of; iron post..... | 797. 690 |
| T. 6 S., Rs. 4 and 5 W., closing corner of; iron post..... | 785. 540 |
| T. 5 S., Rs. 3 and 4 W., standard corner of; iron post..... | 847. 920 |
| T. 6 S., Rs. 3 and 4 W., closing corner of; iron post..... | 809. 775 |
| Chickasaw Nation, west boundary of, closing corner of fractional Tps. 4 and 5 S., R. 8 W.; iron post..... | 871. 986 |
| Chickasaw Nation, west boundary of, closing corner of First Stand- ard Parallel South, in R. 8 W. of the Chickasaw Survey; iron post..... | 904. 740 |

Ardmore Quadrangle.

[Latitude 34°-34° 30'; longitude 97°-97° 30'.]

CARTER, LOVE, AND MURRAY COUNTIES.

The railroad levels were run by A. F. Hassan and Robert Coe. J. H. Carlock, H. L. Baker, E. M. Fry, R. T. Carnall, and Robert Coe did the leveling along township lines.

From Overbrook north along Gulf, Colorado & Santa Fe Ry. to Dougherty.

| | Feet. |
|--|----------|
| Overbrook, 4.5 miles south of, 8 inches from west edge of west coping of north pier of bridge 338, over Little Hickory Creek; cross mark..... | 669. 778 |
| Overbrook, 0.2 mile northwest of, standard corner of T. 5 S., Rs. 1 and 2 E., 1,300 feet west of railroad; iron post..... | 767. 855 |
| Ardmore, 1 mile south of, intersection of railroad with township line, between Tps. 4 and 5 S., R. 2 E., near mile pole 449, 30 feet west of center of track; iron post..... | 863. 595 |
| Ardmore, in sandstone foundation of Noble Bros.' hardware store, at southeast angle of railroad crossing on Main Street; bronze tablet | 874. 243 |

| | Feet. |
|---|----------|
| Ardmore, 6 miles north of, intersection of railroad with township line, between Tps. 3 and 4 S., R. 2 E., in line with telegraph poles, 50 feet south of second pole west of track; iron post..... | 710. 629 |
| Berwyn, 3 miles north of, in east side of coping stone of north pier of bridge 402, over Cool Creek, near mile pole 464; copper bolt..... | 754. 135 |
| Dougherty, 2 miles north of, intersection of railway with township line, between Tps. 1 and 2 S., R. 2 E., 30 feet of track, 6 feet south of telegraph pole, 300 feet south of bridge 417, which is 3,000 feet south of mile pole 472; iron post..... | 763. 309 |

Along township lines.

| | |
|---|-------------|
| Tps. 1 and 2 S., Rs. 2 and 3 W., corner of; iron post..... | 1, 049. 490 |
| Tps. 1 and 2 S., Rs. 1 and 2 W., corner of; iron post..... | 1, 173. 400 |
| Tps. 1 and 2 S., Rs. 1 E. and 1 W., corner of; iron post..... | 1, 306. 019 |
| Tps. 1 and 2 S., Rs. 1 and 2 E., corner of; iron post..... | 1, 092. 449 |
| Tps. 1 and 2 S., Rs. 2 and 3 E., corner of; iron post..... | 788. 419 |
| Tps. 2 and 3 S., Rs. 2 and 3 E., corner of; iron post..... | 810. 712 |
| Tps. 2 and 3 S., Rs. 1 and 2 E., corner of; iron post..... | 911. 352 |
| Tps. 2 and 3 S., Rs. 1 E. and 1 W., corner of; iron post..... | 914. 662 |
| Tps. 2 and 3 S., Rs. 1 and 2 W., corner of; iron post..... | 885. 942 |
| Tps. 2 and 3 S., Rs. 2 and 3 W., corner of; iron post..... | 1, 035. 887 |
| Tps. 3 and 4 S., Rs. 2 and 3 W., corner of; iron post..... | 879. 959 |
| Tps. 3 and 4 S., Rs. 1 and 2 W., corner of; iron post..... | 929. 269 |
| Tps. 3 and 4 S., Rs. 1 E. and 1 W., corner of; iron post..... | 870. 009 |
| Tps. 3 and 4 S., Rs. 1 and 2 E., corner of; iron post..... | 750. 409 |
| Tps. 3 and 4 S., Rs. 2 and 3 E., witness corner of; iron post..... | 719. 959 |
| Tps. 4 and 5 S., Rs. 2 and 3 E., corner of; iron post..... | 892. 545 |
| Tps. 4 and 5 S., Rs. 1 and 2 E., corner of; iron post..... | 860. 495 |
| Tps. 4 and 5 S., Rs. 1 E. and 1 W., corner of; iron post..... | 952. 405 |
| Tps. 4 and 5 S., Rs. 1 and 2 W., corner of; iron post..... | 858. 992 |
| Tps. 4 and 5 S., Rs. 2 and 3 W., corner of; iron post..... | 992. 832 |
| T. 5 S., Rs. 2 and 3 W., standard corner of; iron post..... | 929. 065 |
| T. 6 S., Rs. 2 and 3 W., closing corner of; iron post..... | 932. 53 |
| T. 5 S., Rs. 1 and 2 W., standard corner of; iron post..... | 891. 375 |
| T. 6 S., Rs. 1 and 2 W., closing corner of; iron post..... | 904. 07 |
| Indian meridian, intersection of first standard parallel south with, Tps. 5 and 6 S., Rs. 1 E. and 1 W.; iron post..... | 820. 169 |
| T. 5 S., Rs. 2 and 3 E., standard corner of; iron post..... | 819. 711 |

Tishomingo Quadrangle.

[Latitude 34°-34° 30'; longitude 96° 30'-97°.]

JOHNSTON AND MARSHALL COUNTIES.

The leveling was done by W. R. Manning, H. L. Muldrow, jr., and J. H. Carlock.

Along township lines.

| | Feet. |
|--|-------------|
| Tps. 1 and 2 S., Rs. 3 and 4 E., corner of; iron post..... | 1, 054. 089 |
| Tps. 1 and 2 S., Rs. 4 and 5 E., corner of; iron post..... | 1, 037. 559 |
| Tps. 1 and 2 S., Rs. 5 and 6 E., corner of; iron post..... | 1, 037. 839 |
| Tps. 1 and 2 S., Rs. 6 and 7 E., corner of; iron post..... | 968. 879 |
| Tps. 1 and 2 S., Rs. 7 and 8 E., corner of; iron post..... | 740. 643 |

| | Feet. |
|---|----------|
| Tps. 2 and 3 S., Rs. 7 and 8 E., corner of; iron post..... | 784. 372 |
| Tps. 2 and 3 S., Rs. 6 and 7 E., corner of; iron post..... | 846. 812 |
| Tps. 2 and 3 S., Rs. 5 and 6 E., corner of; iron post..... | 893. 122 |
| Tps. 2 and 3 S., Rs. 4 and 5 E., in township corner stone, which is a stone in place; bronze tablet..... | 905. 012 |
| Tps. 2 and 3 S., Rs. 3 and 4 E., corner of; iron post..... | 860. 182 |
| Tps. 3 and 4 S., Rs. 3 and 4 E., corner of; iron post..... | 780. 849 |
| Tps. 3 and 4 S., Rs. 4 and 5 E., corner of; iron post..... | 811. 349 |
| Tps. 3 and 4 S., Rs. 5 and 6 E., corner of; iron post..... | 696. 399 |
| Tps. 3 and 4 S., Rs. 6 and 7 E., corner of; iron post..... | 719. 939 |
| Tps. 3 and 4 S., Rs. 7 and 8 E., corner of; iron post..... | 728. 119 |
| Tps. 4 and 5 S., Rs. 7 and 8 E., corner of; iron post..... | 738. 245 |
| Tps. 4 and 5 S., Rs. 6 and 7 E., corner of; iron post..... | 600. 555 |
| Tps. 4 and 5 S., Rs. 5 and 6 E., corner of; iron post..... | 787. 325 |
| Tps. 4 and 5 S., Rs. 4 and 5 E., corner of; iron post..... | 794. 875 |
| Tps. 4 and 5 S., Rs. 3 and 4 E., corner of; iron post..... | 859. 875 |
| T. 5 S., Rs. 3 and 4 E., standard corner of; iron post..... | 731. 830 |
| T. 6 S., Rs. 4 and 5 E., closing corner of; iron post..... | 873. 666 |
| T. 5 S., Rs. 4 and 5 E., standard corner of; iron post..... | 861. 906 |
| T. 5 S., Rs. 5 and 6 E., standard corner of; iron post..... | 689. 277 |
| T. 5 S., Rs. 6 and 7 E., standard corner of; iron post..... | 756. 615 |
| T. 5 S., Rs. 7 and 8 E., standard corner of; iron post..... | 659. 241 |

Atoka Quadrangle.

[Latitude 34°-34° 30'; longitude 96°-96° 30'.]

ATOKA AND BRYAN COUNTIES.

The railroad levels were run by G. A. Purington and W. R. Manning. Robert Coe, W. R. Manning, and H. L. Muldrow, jr., did the leveling along township lines.

From Stringtown southwest along Missouri, Kansas & Texas Ry. to Armstrong.

| | Feet. |
|---|----------|
| Stringtown, 0.5 mile south of, 100 feet east of track and 1,000 feet south of mile pole 603, in 10-inch elm tree; nail..... | 596. 404 |
| Atoka, 0.25 mile north of, in second coping stone from east side of north pier of bridge 367, over Muddy Boggy Creek; copper bolt... | 542. 175 |
| Peck, 40 feet east of track, 350 feet south of mile pole 615, in 14- inch black-jack oak tree; nail..... | 617. 896 |
| Caney, 0.5 mile north of, in first step of west side of south abutment of bridge 388, 500 feet south of mile pole 621; copper bolt..... | 519. 017 |
| Caddo, 2 miles north of, in second coping stone from east side of south abutment of bridge 403, 1,800 feet north of mile pole 627; copper bolt..... | 593. 361 |
| Armstrong, in first coping stone from north edge of north abutment of bridge 421, over Blue River, 600 feet north of the Armstrong switch; copper bolt..... | 569. 291 |

On Coalgate branch of Missouri, Kansas & Texas Ry.

| | |
|---|----------|
| Lehigh, southwest corner of Main Street and "Wild Cat Row," in stone of first layer of foundation near northeast corner of building owned by Joe Grillery; bronze tablet..... | 596. 119 |
|---|----------|

Along township lines.

| | Feet. |
|--|----------|
| Chickasaw-Choctaw boundary line, closing corner of Tps. 1 and 2 S., R. 8 E., of the Chickasaw survey; iron post----- | 668. 793 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 1 and 2 S., R. 8 E., of the Choctaw survey; iron post----- | 668. 383 |
| Tps. 1 and 2 S., Rs. 8 and 9 E., corner of; iron post----- | 621. 530 |
| Tps. 1 and 2 S., Rs. 9 and 10 E., corner of; iron post----- | 597. 371 |
| Tps. 1 and 2 S., Rs. 10 and 11 E., corner of; iron post----- | 593. 414 |
| Tps. 1 and 2 S., Rs. 11 and 12 E., corner of; iron post----- | 599. 56 |
| Tps. 2 and 3 S., Rs. 11 and 12 E., corner of; iron post----- | 600. 036 |
| Tps. 2 and 3 S., Rs. 10 and 11 E., corner of; iron post----- | 634. 862 |
| Tps. 2 and 3 S., Rs. 9 and 10 E., corner of; iron post----- | 535. 452 |
| Tps. 2 and 3 S., Rs. 8 and 9 E., corner of; iron post----- | 637. 182 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 2 and 3 S., R. 8 E., of the Choctaw survey; iron post----- | 708. 002 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 2 and 3 S., R. 8 E., of the Chickasaw survey; iron post----- | 765. 902 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 3 and 4 S., R. 8 E., of the Chickasaw survey; iron post----- | 655. 299 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 3 and 4 S., R. 8 E., of the Choctaw survey; iron post----- | 653. 459 |
| Tps. 3 and 4 S., Rs. 8 and 9 E., corner of; iron post----- | 720. 342 |
| Tps. 3 and 4 S., Rs. 9 and 10 E., corner of; iron post----- | 690. 787 |
| Tps. 3 and 4 S., Rs. 10 and 11 E., corner of; iron post----- | 504. 794 |
| Tps. 3 and 4 S., Rs. 11 and 12 E., corner of; iron post----- | 559. 429 |
| T. 4 S., Rs. 11 and 12 E., standard corner of; iron post----- | 524. 342 |
| T. 5 S., Rs. 11 and 12 E., closing corner of; iron post----- | 504. 702 |
| T. 4 S., Rs. 10 and 11 E., standard corner of; iron post----- | 644. 052 |
| T. 5 S., Rs. 10 and 11 E., closing corner of; iron post----- | 649. 857 |
| T. 4 S., Rs. 9 and 10 E., standard corner of; iron post----- | 634. 057 |
| T. 5 S., Rs. 9 and 10 E., closing corner of; iron post----- | 632. 017 |
| Tps. 4 and 5 S., Rs. 8 and 9 E., standard corner of; intersection of 1st standard parallel south with the 2d guide meridian east; iron post----- | 602. 087 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 4 and 5 S., R. 8 E., of the Choctaw survey; iron post----- | 670. 087 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 4 and 5 S., R. 8 E., of the Chickasaw survey; iron post----- | 670. 907 |
| Chickasaw-Choctaw boundary line, closing corner of Tps. 5 and 6 S., R. 8 E., of the Chickasaw and Choctaw surveys; iron post----- | 710. 747 |
| Tps. 5 and 6 S., Rs. 8 and 9 E., corner of; iron post----- | 633. 960 |
| Tps. 5 and 6 S., Rs. 9 and 10 E., corner of; iron post----- | 636. 050 |
| Tps. 5 and 6 S., Rs. 10 and 11 E., corner of; iron post----- | 605. 815 |
| Tps. 5 and 6 S., Rs. 11 and 12 E., corner of; iron post----- | 716. 155 |

Antlers Quadrangle.

[Latitude 34°-34° 30'; longitude 95° 30'-96°.]

ATOKA, CHOCTAW, AND PUSHMATAHA COUNTIES.

H. C. McCluer ran the railroad levels. Robert Coe, R. T. Carnall, F. E. Fellows, and W. P. Halliday did the leveling along township lines.

From Butler south along St. Louis & San Francisco R. R. to Goodland.

| | Feet. |
|--|----------|
| Butler, 140 feet east of track, 400 feet south of mile pole 522, in 14-inch elm tree; nail----- | 530. 266 |
| Wadena, 0.3 mile north of, in west end of south abutment of bridge; square hole----- | 493. 085 |
| Wadena, 90 feet east of track, 200 feet south of milepost 527; 10-inch elm tree----- | 487. 525 |
| Kosoma, 0.3 mile south of, 60 feet west of track, 1,700 feet south of mile pole 531; 12-inch post oak tree----- | 484. 906 |
| Rodney, 90 feet east and 600 feet south of mile pole 537, in 10-inch post oak tree; nail----- | 470. 236 |
| Davenport, 0.3 mile south of, 100 feet east of track, opposite mile pole 539, 15-inch red oak tree; nail----- | 476. 086 |
| Antlers, in section corner stone, common to secs. 3, 4, 9, and 10, T. 4 S., R. 16 E., 28 feet north of northwest corner of Antlers court house; square hole----- | 510. 656 |
| Antlers, 4 miles south of, 100 feet west of track, 175 feet south of mile pole 546, in 8-inch black-jack tree; nail----- | 560. 553 |
| Hamden, 60 feet west of track, 50 feet east of mile pole 549, in 24-inch red oak tree; nail----- | 466. 361 |
| Goodland, 2 miles north of, 60 feet west of track, 275 feet south of mile pole 554; 20-inch red oak tree----- | 495. 916 |
| Goodland, 1,000 feet north of station, 60 feet right of track, 120 feet north of mile pole 556; 6-inch elm tree----- | 493. 769 |

Along township lines.

| | |
|--|----------|
| Tps. 1 and 2 S., Rs. 12 and 13 E., corner of; iron post----- | 726. 43 |
| Tps. 1 and 2 S., Rs. 13 and 14 E., corner of; iron post----- | 844. 145 |
| Tps. 1 and 2 S., Rs. 14 and 15 E., corner of; iron post----- | 945. 5 |
| Tps. 1 and 2 S., Rs. 15 and 16 E., in township corner stone, which is a "stone in place"; bronze tablet----- | 699. 305 |
| Tps. 1 and 2 S., Rs. 16 and 17 E., corner of; iron post----- | 667. 305 |
| Tps. 2 and 3 S., Rs. 16 and 17 E., corner of; iron post----- | 619. 838 |
| Tps. 2 and 3 S., Rs. 15 and 16 E., corner of; iron post----- | 814. 300 |
| Tps. 2 and 3 S., Rs. 14 and 15 E., corner of; iron post----- | 664. 911 |
| Tps. 2 and 3 S., Rs. 13 and 14 E., corner of; iron post----- | 582. 696 |
| Tps. 2 and 3 S., Rs. 12 and 13 E., corner of; iron post----- | 607. 021 |
| Tps. 3 and 4 S., Rs. 12 and 13 E., corner of; iron post----- | 570. 309 |
| Tps. 3 and 4 S., Rs. 13 and 14 E., corner of; iron post----- | 498. 984 |
| Tps. 3 and 4 S., Rs. 14 and 15 E., corner of; iron post----- | 624. 034 |
| Tps. 3 and 4 S., Rs. 15 and 16 E., corner of; iron post----- | 567. 304 |
| Tps. 3 and 4 S., Rs. 16 and 17 E., corner of; iron post----- | 455. 314 |
| T. 4 S., Rs. 16 and 17 E., standard corner; iron post----- | 470. 74 |
| T. 5 S., Rs. 16 and 17 E., closing corner of; iron post----- | 505. 57 |
| T. 4 S., Rs. 15 and 16 E., standard corner of; iron post----- | 631. 700 |
| T. 5 S., Rs. 15 and 16 E., closing corner of; iron post----- | 622. 555 |
| T. 4 S., Rs. 14 and 15 E., standard corner of; iron post----- | 576. 365 |
| T. 5 S., Rs. 14 and 15 E., closing corner of; iron post----- | 533. 220 |
| T. 4 S., Rs. 13 and 14 E., standard corner of; iron post----- | 546. 070 |
| T. 5 S., Rs. 13 and 14 E., closing corner of; iron post----- | 533. 610 |
| T. 4 S., Rs. 12 and 13 E., standard corner of; iron post----- | 467. 290 |
| T. 5 S., Rs. 12 and 13 E., closing corner of; iron post----- | 467. 555 |
| Tps. 5 and 6 S., Rs. 12 and 13 E., corner of; iron post----- | 731. 190 |
| Tps. 5 and 6 S., Rs. 13 and 14 E., corner of; iron post----- | 525. 780 |

| | Feet. |
|--|---------|
| Tps. 5 and 6 S., Rs. 14 and 15 E., corner of; iron post..... | 483.550 |
| Tps. 5 and 6 S., Rs. 15 and 16 E., corner of; iron post..... | 518.050 |
| Tps. 5 and 6 S., Rs. 16 and 17 E., corner of; iron post..... | 534.070 |

Alikchi Quadrangle.

[Latitude 34°-34° 30'; longitude 95°-95° 30'.]

CHOCTAW AND PUSHMATAHA COUNTIES.

The leveling was done by F. E. Fellows, V. T. Rhyne, W. P. Halliday, Oscar Jones, and G. H. Bartlett.

Along township lines.

| | Feet. |
|---|-----------|
| Tps. 1 and 2 S., Rs. 17 and 18 E., corner of; iron post..... | 569.805 |
| Tps. 1 and 2 S., Rs. 18 and 19 E., corner of; iron post..... | 1,041.572 |
| Tps. 1 and 2 S., Rs. 19 and 20 E., corner of; iron post..... | 815.782 |
| Tps. 1 and 2 S., Rs. 20 and 21 E., corner of; iron post..... | 748.835 |
| Tps. 1 and 2 S., Rs. 21 and 22 E., corner of; iron post..... | 949.200 |
| Tps. 2 and 3 S., Rs. 21 and 22 E., corner of; iron post..... | 1,255.699 |
| Tps. 2 and 3 S., Rs. 20 and 21 E., corner of; iron post..... | 594.711 |
| Tps. 2 and 3 S., Rs. 19 and 20 E., corner of; iron post..... | 703.490 |
| Tps. 2 and 3 S., Rs. 18 and 19 E., corner of; iron post..... | 975.402 |
| Tps. 2 and 3 S., Rs. 17 and 18 E., corner of; iron post..... | 506.459 |
| Tps. 3 and 4 S., Rs. 17 and 18 E., corner of; iron post..... | 694.886 |
| Tps. 3 and 4 S., Rs. 18 and 19 E., corner of; iron post..... | 611.142 |
| Tps. 3 and 4 S., Rs. 19 and 20 E., corner of; iron post..... | 847.537 |
| Tps. 3 and 4 S., Rs. 20 and 21 E., corner of; iron post..... | 531.073 |
| Tps. 3 and 4 S., Rs. 21 and 22 E., corner of; iron post..... | 702.352 |
| T. 4 S., Rs. 21 and 22 E., standard corner of; iron post..... | 561.901 |
| T. 5 S., Rs. 21 and 22 E., closing corner of; iron post..... | 528.905 |
| T. 4 S., Rs. 20 and 21 E., standard corner of; iron post..... | 535.619 |
| T. 5 S., Rs. 20 and 21 E., closing corner of; iron post..... | 548.238 |
| T. 4 S., Rs. 19 and 20 E., standard corner of; iron post..... | 695.713 |
| T. 5 S., Rs. 19 and 20 E., closing corner of; iron post..... | 683.573 |
| T. 4 S., Rs. 18 and 19 E., standard corner of; iron post..... | 461.834 |
| T. 5 S., Rs. 18 and 19 E., closing corner of; iron post..... | 468.157 |
| T. 4 S., Rs. 17 and 18 E., standard corner of; iron post..... | 414.246 |
| T. 5 S., Rs. 17 and 18 E., closing corner of; iron post..... | 416.185 |
| Tps. 5 and 6 S., Rs. 17 and 18 E., corner of; iron post..... | 413.873 |
| Tps. 5 and 6 S., Rs. 18 and 19 E., corner of; iron post..... | 436.519 |
| Tps. 5 and 6 S., Rs. 19 and 20 E., corner of; iron post..... | 435.284 |
| Tps. 5 and 6 S., Rs. 20 and 21 E., corner of; iron post..... | 608.413 |
| Tps. 5 and 6 S., Rs. 21 and 22 E., corner of; iron post..... | 392.405 |

Lukfata Quadrangle.

[Latitude 34°-34° 30'; longitude 94° 30'-95°.]

McCURTAIN COUNTY.

The leveling was done by F. E. Fellows, W. P. Halliday, Oscar Jones, and G. H. Bartlett.

Along township lines.

| | Feet. |
|--|-----------|
| Tps. 1 and 2 S., Rs. 22 and 23 E., corner of; iron post..... | 780.96 |
| Tps. 1 and 2 S., Rs. 23 and 24 E., corner of; iron post..... | 1,091.900 |

| | Feet. |
|---|------------------------|
| Tps. 1 and 2 S., Rs. 24 and 25 E., corner of; iron post..... | 962.320 |
| Tps. 1 and 2 S., Rs. 25 and 26 E., corner of; iron post..... | 759.920 |
| Tps. 1 and 2 S., Rs. 26 and 27 E., corner of; iron post..... | 1,022.109 |
| Tps. 2 and 3 S., Rs. 26 and 27 E., corner of; iron post..... | 1,173.596 |
| Tps. 2 and 3 S., Rs. 25 and 26 E., corner of; iron post..... | 1,047.413 |
| Tps. 2 and 3 S., Rs. 24 and 25 E., corner of; iron post..... | 891.402 |
| Tps. 2 and 3 S., Rs. 23 and 24 E., corner of; iron post..... | 946.702 |
| Tps. 2 and 3 S., Rs. 22 and 23 E., corner of; iron post..... | 741.549 |
| Tps. 3 and 4 S., Rs. 22 and 23 E., corner of; iron post..... | 744.973 |
| Tps. 3 and 4 S., Rs. 23 and 24 E., corner of; iron post..... | 820.362 |
| Tps. 3 and 4 S., Rs. 24 and 25 E., corner of; iron post..... | 687.497 |
| Tps. 3 and 4 S., Rs. 25 and 26 E., corner of; iron post..... | 631.196 |
| Tps. 3 and 4 S., Rs. 26 and 27 E., corner of; iron post..... | ¹ 1,086.419 |
| T. 4 S., Rs. 26 and 27 E., standard corner of; iron post..... | 808.691 |
| T. 5 S., Rs. 26 and 27 E., closing corner of; iron post..... | 829.448 |
| T. 4 S., Rs. 25 and 26 E., standard corner of; iron post..... | 646.731 |
| T. 5 S., Rs. 25 and 26 E., closing corner of; iron post..... | 592.008 |
| T. 4 S., Rs. 24 and 25 E., standard corner of; iron post..... | 759.221 |
| T. 5 S., Rs. 24 and 25 E., closing corner of; iron post..... | 683.751 |
| T. 4 S., Rs. 23 and 24 E., standard corner of; iron post..... | 752.946 |
| T. 5 S., Rs. 23 and 24 E., closing corner of; iron post..... | 740.116 |
| T. 4 S., Rs. 22 and 23 E., standard corner of; iron post..... | 643.431 |
| T. 5 S., Rs. 22 and 23 E., closing corner of; iron post..... | 751.146 |
| Tps. 5 and 6 S., Rs. 22 and 23 E., corner of; iron post..... | 461.475 |
| Tps. 5 and 6 S., Rs. 23 and 24 E., corner of; iron post..... | 494.122 |
| Tps. 5 and 6 S., Rs. 24 and 25 E., corner of; iron post..... | 471.085 |
| Tps. 5 and 6 S., Rs. 25 and 26 E., corner of; iron post..... | 451.733 |
| Tps. 5 and 6 S., Rs. 26 and 27 E., corner of; iron post..... | ¹ 487.457 |

Dequeen Quadrangle.

[Latitude 34° 30'; longitude 94°-94° 30'.]

McCURTAIN COUNTY.

| | Feet. |
|---|---------|
| Arkansas-Choctaw boundary line closing corner, first standard parallel south, between Tps. 4 and 5 S., R. 27 E., cross on stone corner..... | 735.421 |

Shawncetown Quadrangle.

[Latitude 33° 30'-34°; longitude 94° 30'-95°.]

McCURTAIN COUNTY.

The leveling was done by G. H. Bartlett, W. P. Halliday, F. E. Fellows, and O. Jones.

Along township and section lines.

| | Feet. |
|--|---------|
| Tps. 6 and 7 S., Rs. 22 and 23 E., corner of; iron post..... | 403.219 |
| Tps. 6 and 7 S., Rs. 23 and 24 E., corner of; iron post..... | 398.309 |
| Tps. 6 and 7 S., Rs. 24 and 25 E., corner of; iron post..... | 360.814 |
| Tps. 6 and 7 S., Rs. 25 and 26 E., corner of; iron post..... | 390.282 |
| Tps. 6 and 7 S., Rs. 26 and 27 E., corner of; iron post..... | 329.908 |

¹ Bulletin 458, pp. 24-25.

| | Feet. |
|---|----------|
| Tps. 7 and 8 S., Rs. 26 and 27 E., corner of; iron post----- | 398. 212 |
| Tps. 7 and 8 S., Rs. 25 and 26 E., corner of; iron post----- | 344. 116 |
| Tps. 7 and 8 S., Rs. 24 and 25 E., corner of; iron post----- | 447. 219 |
| Tps. 7 and 8 S., Rs. 23 and 24 E., corner of; iron post----- | 505. 622 |
| Tps. 7 and 8 S., Rs. 22 and 23 E., corner of; iron post----- | 419. 255 |
| Red River, left bank of; meander corner of T. 8 S., Rs. 22 and 23 E., secs. 19 and 24, 12-inch mulberry trees, which is northeast-bearing tree to meander corner----- | 366. 427 |
| T. 9 S., Rs. 23 and 24 E., closing corner of; iron post----- | 358. 174 |
| T. 8 S., Rs. 23 and 24 E., standard corner of; iron post----- | 353. 124 |
| T. 9 S., Rs. 24 and 25 E., closing corner of; iron post----- | 411. 892 |
| T. 8 S., Rs. 24 and 25 E., standard corner of; iron post----- | 384. 307 |
| T. 9 S., Rs. 25 and 26 E., closing corner of; iron post----- | 413. 175 |
| T. 8 S., Rs. 25 and 26 E., standard corner of; iron post----- | 422. 708 |
| T. 9 S., Rs. 26 and 27 E., closing corner of; iron post----- | 402. 327 |
| T. 8 S., Rs. 26 and 27 E., standard corner of; iron post----- | 402. 157 |
| Tps. 9 and 10 S., 26 and 27 E., corner of; iron post----- | 353. 927 |
| Tps. 9 and 10 S., Rs. 25 and 26 E., corner of; iron post----- | 335. 072 |
| Tps. 9 and 10 S., Rs. 24 and 25 E., witness corner of; iron post----- | 338. 989 |
| Red River, left bank of, 850 feet south of Harris Ferry; witness cor- ner to Tps. 9 and 10 S., Rs. 24 and 25 E., on root of 16-inch bois d'arc tree; nail----- | 343. 833 |
| Red River, left bank of; meander corner of T. 9 S., Rs. 23 and 24 E., secs. 25 and 30; iron post----- | 352. 029 |

Horatio Quadrangle.

[Latitude 33° 45'-34° 15'; longitude 94° 15'-94° 30'.]

McCURTAIN COUNTY.

| | |
|--|----------|
| Arkansas-Oklahoma boundary, closing corner, Tps. 7 and 8 S., R. 27 E.; iron post----- | 402. 38 |
| Arkansas-Oklahoma boundary, closing corner, second standard paral- lel south, between Tps. 8 and 9 S., R. 27 E.; nail in root of bearing tree----- | 395. 555 |

Clarksville Quadrangle.

[Latitude 33° 30'-34°; longitude 95°-95° 30'.]

CHOCTAW COUNTY.

H. C. McCluer ran the railroad levels. J. H. Carlock, W. P. Halliday, and Oscar Jones did the leveling along township and section lines.

On the St. Louis & San Francisco R. R.

| | Feet. |
|--|----------|
| Arthur, Tex., 0.5 mile north of, in east coping stone of north abut- ment of bridge 440; copper bolt stamped 420----- | 421. 798 |

Along township and section lines.

| | |
|--|----------|
| Tps. 6 and 7 S., Rs. 17 and 18 E., corner of; iron post----- | 515. 662 |
| Tps. 6 and 7 S., Rs. 18 and 19 E., corner of; iron post----- | 391. 369 |
| Tps. 6 and 7 S., Rs. 19 and 20 E., corner of; iron post----- | 399. 483 |

| | |
|--|----------|
| | Feet. |
| Tps. 6 and 7 S., Rs. 20 and 21 E., corner of; iron post..... | 453. 767 |
| Tps. 6 and 7 S., Rs. 21 and 22 E., corner of; iron post..... | 472. 276 |
| Red River, on left bank of, meander corner between sec. 13, T. 7 S., R. 20 E., and sec. 18, T. 7 S., R. 21 E.; iron post..... | 377. 754 |
| Red River, on left bank of, meander corner between sec. 35, T. 7 S., R. 19 E., and sec. 2, T. 8 S., R. 19 E.; iron post..... | 396. 641 |
| Tps. 7 and 8 S., Rs. 18 and 19 E., corner of; iron post..... | 485. 511 |
| Tps. 7 and 8 S., Rs. 17 and 18 E., corner of; iron post..... | 416. 361 |

Paris Quadrangle.

[Latitude 33° 30'-34°; longitude 95° 30'-96°.]

CHOCTAW COUNTY.

The levels were run by H. C. McCluer and J. H. Carlock.

From Grant south along St. Louis & San Francisco R. R. to Lenoir.

| | |
|---|----------|
| | Feet. |
| Grant, 0.25 mile south of, 50 feet west of track, 35 feet south of mile pole 564; 8-inch red oak tree..... | 465. 78 |
| Lenoir, 40 feet east of track and 350 feet south of mile pole 573; 8-inch post oak tree..... | 528. 119 |

Along township and section lines.

| | |
|--|----------|
| Tps. 6 and 7 S., Rs. 12 and 13 E., corner of; iron post..... | 596. 712 |
| Tps. 6 and 7 S., Rs. 13 and 14 E., corner of; iron post..... | 604. 572 |
| Tps. 6 and 7 S., Rs. 14 and 15 E., corner of; iron post..... | 536. 282 |
| Tps. 6 and 7 S., Rs. 15 and 16 E., corner of; iron post..... | 486. 172 |
| Tps. 6 and 7 S., Rs. 16 and 17 E., corner of; iron post..... | 503. 002 |
| Red River, meander corner between sec. 32, T. 7 S., and sec. 5, T. 8 S., R. 17 E.; iron post..... | 414. 091 |

Bonham Quadrangle.

[Latitude 33° 30'-34°; longitude 96°-96° 30'.]

BRYAN COUNTY.

W. R. Manning and H. C. McCluer ran the railroad levels. W. R. Manning, H. L. Baker, and J. H. Carlock did the leveling along township lines.

From Durant along Missouri, Kansas & Texas Ry. to Colbert.

| | |
|--|----------|
| | Feet. |
| Durant, 0.4 mile south of, in second coping stone from the west, 1.7 feet from the north edge and 3.3 feet from the west edge of first coping stone of the north abutment of bridge 430, over Mineral Bayou; copper bolt..... | 621. 092 |

Along township lines.

| | |
|--|----------|
| Chickasaw-Choctaw boundary line, closing corner Tps. 6 and 7 S., R. 8 E., of the Choctaw survey; iron post..... | 719. 556 |
| Tps. 6 and 7 S., Rs. 8 and 9 E., corner of; iron post..... | 670. 235 |
| Tps. 6 and 7 S., Rs. 9 and 10 E., corner of; iron post..... | 627. 352 |
| Tps. 6 and 7 S., Rs. 10 and 11 E., corner of; iron post..... | 567. 622 |
| Tps. 6 and 7 S., Rs. 11 and 12 E., corner of; iron post..... | 585. 862 |
| Chickasaw-Choctaw boundary line, closing corner Tps. 7 and 8 S., R. 8 E., of Chickasaw survey; iron post..... | 822. 137 |

| | Feet. |
|--|---------|
| Tps. 8 and 9 S., Rs. 8 and 9 E., corner of; iron post----- | 626.566 |
| Tps. 8 and 9 S., Rs. 9 and 10 E., corner of; iron post----- | 643.386 |
| Tps. 8 and 9 S., Rs. 10 and 11 E., corner of; iron post----- | 495.896 |

Denison Quadrangle.

[Latitude 33° 30'-34°; longitude 96° 30'-97°.]

MARSHALL COUNTY.

The railroad levels were run by W. R. Manning, H. C. McCluer, R. T. Carnall, and A. F. Hassan. J. H. Carlock did the leveling along township and section lines.

Along township and section lines.

| | Feet. |
|---|---------|
| Tps. 6 and 7 S., Rs. 3 and 4 E., corner of; iron post----- | 668.968 |
| Tps. 6 and 7 S., Rs. 4 and 5 E., corner of; iron post----- | 762.847 |
| Tps. 6 and 7 S., Rs. 5 and 6 E., corner of; iron post----- | 751.597 |
| Tps. 6 and 7 S., Rs. 6 and 7 E., corner of; iron post----- | 585.707 |
| Tps. 6 and 7 S., Rs. 7 and 8 E., corner of; iron post----- | 686.117 |
| Tps. 7 and 8 S., Rs. 7 and 8 E., corner of; iron post----- | 670.317 |
| Red River, meander corner on, T. 7 S., R. 7 E., sec. 33, and T. 8 S., R. 7 E., sec. 4; on stone----- | 543.917 |
| Red River, meander corner on, between T. 7 S., R. 6 E., sec. 33, and T. 8 S., R. 6 E., sec. 4; on stone----- | 551.431 |
| Tps. 7 and 8 S., Rs. 5 and 6 E., corner of; iron post----- | 727.421 |
| Tps. 7 and 8 S., Rs. 4 and 5 E., corner of; iron post----- | 723.071 |
| Red River, meander corner on, between T. 7 S., R. 4 E., sec. 33, and T. 8 S., R. 4 E., sec. 4; on stone----- | 570.661 |
| Red River, meander corner on, between T. 7 S., R. 4 E., sec. 7, and T. 7 S., R. 3 E., sec. 12; iron post----- | 594.758 |
| Red River, meander corner on, between T. 7 S., R. 3 E., sec. 34, and T. 8 S., R. 3 E., sec. 3; on stone----- | 606.528 |
| Red River, meander corner on, between T. 8 S., R. 4 E., sec. 12, and T. 8 S., R. 4 E., sec. 7; iron post----- | 578.420 |
| Red River, meander corner on, between T. 8 S., R. 5 E., sec. 25, and T. 8 S., R. 6 E., sec. 30; iron post----- | 562.821 |
| Red River, meander corner on, between T. 8 S., R. 8 E., sec. 31, and T. 9 S., R. 8 E., sec. 6; iron post----- | 531.116 |

Near Colbert.

| | |
|--|---------|
| Colbert, 2.8 miles south of; in first step of the north abutment of bridge 451, over Red River; copper bolt 1.3 feet from north edge, 1 foot from south edge, and 0.9 foot from west edge----- | 551.879 |
|--|---------|

Gainesville Quadrangle.

[Latitude 33° 30'-34°; longitude 97°-97° 30'.]

LOVE COUNTY.

The railroad levels were run by R. T. Carnall and Robert Coe. J. H. Carlock and R. T. Carnall did the leveling along township and section lines.

At Marietta.

| | Feet. |
|--|---------|
| Marietta, near middle of east face of second stone above foundation at northeast corner of two-story stone store, owned and occupied by S. S. Evants; bronze tablet----- | 846.420 |

Along township and section lines.

| | |
|--|---------|
| Tps. 6 and 7 S., Rs. 2 and 3 W., corner of; iron post----- | 922.810 |
| Tps. 6 and 7 S., Rs. 1 and 2 W., corner of; iron post----- | 772.048 |
| Tps. 6 and 7 S., Rs. 1 W. and 1 E., corner of; iron post----- | 919.128 |
| Tps. 6 and 7 S., Rs. 1 and 2 E., corner of; iron post----- | 798.118 |
| Tps. 6 and 7 S., Rs. 2 and 3 E., corner of; iron post----- | 664.278 |
| Tps. 7 and 8 S., Rs. 2 and 3 E., corner of; iron post----- | 739.136 |
| Tps. 7 and 8 S., Rs. 1 and 2 E., corner of; iron post----- | 781.736 |
| Red River, meander corner on, between sec. 34, T. 7 S., R. 1 E., and sec. 3, T. 8 S., R. 1 E.; on stone----- | 672.496 |
| Red River, meander corner on, between sec. 31, T. 7 S., R. 1 E., and sec. 36, T. 7 S., R. 1 W.; on stone----- | 677.768 |
| Red River, meander corner on, between sec. 36, T. 7 S., R. 1 W., and sec. 1, T. 8 S., R. 1 W.; iron post----- | 679.281 |
| Tps. 7 and 8 S., Rs. 1 and 2 W., corner of; iron post----- | 829.008 |
| Red River, meander corner on, between sec. 31, T. 7 S., R. 2 W., and sec. 6, T. 8 S., R. 2 W.; iron post----- | 722.500 |
| Red River, meander corner on, between sec. 31, T. 7 S., R. 2 W., and sec. 36, T. 7 S., R. 3 W.; iron post----- | 724.300 |
| Red River, meander corner on, between sec. 13, T. 8 S., R. 2 W., and sec. 18, T. 8 S., R. 1 W.; iron post----- | 698.600 |
| Red River, meander corner on, between sec. 34, T. 8 S., R. 1 E., and sec. 3, T. 9 S., R. 1 E.; on stone----- | 660.336 |
| Tps. 8 and 9 S., Rs. 1 and 2 E., corner of; iron post----- | 666.356 |
| Red River, meander corner on, between sec. 34, T. 8 S., R. 2 E., and sec. 3, T. 9 S., R. 2 E.; on stone----- | 629.306 |
| Red River, meander corner on, between sec. 24, T. 8 S., R. 2 E., and sec. 19, T. 8 S., R. 3 E.; on stone----- | 614.086 |

Montague Quadrangle.

[Latitude 33° 30'–34°; longitude 97° 30'–98°.]

JEFFERSON COUNTY.

Robert Coe ran the railroad levels. J. P. Walker and Robert Coe did the leveling along township and section lines.

From Ryan along Chicago, Rock Island & Pacific Ry. to Terral.

| | Feet. |
|---|----------------------|
| Terral, 1 mile south of, in west end of north pier of bridge 3219, over Red River; copper bolt----- | ¹ 809.168 |

Along township and section lines.

| | |
|---|---------|
| Red River, meander corner on, between sec. 32, T. 6 S., R. 7 W., and sec. 5, T. 7 S., R. 7 W.; iron post----- | 814.996 |
| Tps. 6 and 7 S., Rs. 6 and 7 W., corner of; iron post----- | 929.023 |
| Tps. 6 and 7 S., Rs. 5 and 6 W., corner of; iron post----- | 854.832 |

¹ Redetermined by Coast and Geodetic Survey precise leveling.

| | Feet. |
|---|---------|
| Red River, meander corner on, between sec. 35, T. 6 S., R. 5 W., and sec. 2, T. 7 S., R. 5 W.; iron post----- | 763.681 |
| Red River, meander corner on, between sec. 33, T. 6 S., R. 4 W., and sec. 4, T. 7 S., R. 4 W.; iron post----- | 749.300 |
| Tps. 6 and 7 S., Rs. 3 and 4 W., corner of; iron post----- | 810.255 |
| Red River, meander corner on, between sec. 31, T. 7 S., R. 3 W., and sec. 36, T. 7 S., R. 4 W.; iron post----- | 731.200 |
| Red River, meander corner on, between sec. 35, T. 7 S., R. 6 W., and sec. 2, T. 8 S., R. 6 W.; iron post----- | 774.220 |
| Tps. 7 and 8 S., Rs. 6 and 7 W., corner of; iron post----- | 887.929 |
| Red River, meander corner on, between sec. 31, T. 7 S., R. 7 W., and sec. 6, T. 8 S., R. 7 W.; iron post----- | 801.216 |
| Red River, meander corner on, between sec. 18, T. 8 S., R. 6 W., and sec. 13, T. 8 S., R. 7 W.; iron post----- | 794.136 |

Addington, Rush Springs, and Chickasha Quadrangles.

CANADIAN, GRADY, JEFFERSON, AND STEPHENS COUNTIES.

The leveling was done by W. A. Lindsay in 1898.

ADDINGTON QUADRANGLE.

[Latitude 34°-34° 30'; longitude 97° 30'-98°.]

Along ninety-eighth meridian between Red and Canadian rivers.

| | Feet. |
|--|-----------|
| Initial point, concrete pier, stamped "854"----- | 854.525 |
| Milepost 1, stamped "913"----- | 913.228 |
| Milepost 2, stamped "927"----- | 927.017 |
| Milepost 3, stamped "863"----- | 863.232 |
| Milepost 4, stamped "889"----- | 900.386 |
| Milepost 5, stamped "933"----- | 933.482 |
| Milepost 6, stamped "910"----- | 910.157 |
| Milepost 7, stamped "868"----- | 868.175 |
| Milepost 8, stamped "882"----- | 882.022 |
| Milepost 9, stamped "868"----- | 868.115 |
| Milepost 10, stamped "875"----- | 874.887 |
| Milepost 11, stamped "883"----- | 882.847 |
| Milepost 12, stamped "884"----- | 883.911 |
| Milepost 13, stamped "895"----- | 893.794 |
| Milepost 14, stamped "897"----- | 897.535 |
| Milepost 15, stamped "931"----- | 931.407 |
| Milepost 16, stamped "973"----- | 973.605 |
| Milepost 17, stamped "979"----- | 979.286 |
| Milepost 18, stamped "972"----- | 971.915 |
| Milepost 19, stamped "939"----- | 939.550 |
| Milepost 20, stamped "945"----- | 945.547 |
| Milepost 21, stamped "1007"----- | 1,007.607 |
| Milepost 22, stamped "1017"----- | 1,017.901 |
| Milepost 23, stamped "1034"----- | 1,034.513 |
| Milepost 24, stamped "1034"----- | 1,034.138 |
| Milepost 25, stamped "1054"----- | 1,054.409 |
| Milepost 26, stamped "1075"----- | 1,075.857 |
| Milepost 27, stamped "1074"----- | 1,074.373 |

¹ By Coast and Geodetic Survey precise leveling.

| | Feet. |
|----------------------------------|-------------|
| Milepost 28, stamped "1070"----- | 1, 070. 798 |
| Milepost 29, stamped "1127"----- | 1, 127. 802 |
| Milepost 30, stamped "1135"----- | 1, 135. 799 |
| Milepost 31, stamped "1143"----- | 1, 143. 329 |
| Milepost 32, stamped "1121"----- | 1, 121. 457 |
| Milepost 33, stamped "1104"----- | 1, 104. 083 |

RUSH SPRINGS QUADRANGLE.

[Latitude 34° 30'–35° ; longitude 97° 30'–98°.]

| | Feet. |
|--|-------------|
| Milepost 34, stamped "1137"----- | 1, 137. 830 |
| Milepost 35, stamped "1144"----- | 1, 144. 452 |
| Milepost 36, stamped "1147"----- | 1, 147. 396 |
| Milepost 37, stamped "1170"----- | 1, 170. 249 |
| Milepost 38, stamped "1211"----- | 1, 211. 498 |
| Milepost 39, stamped "1213"----- | 1, 213. 249 |
| Milepost 40, stamped "1206"----- | 1, 206. 636 |
| Milepost 41, stamped "1151"----- | 1, 151. 490 |
| Milepost 42, stamped "1196"----- | 1, 196. 323 |
| Milepost 43, stamped "1204"----- | 1, 203. 928 |
| Milepost 44, stamped "1237"----- | 1, 237. 232 |
| Milepost 45, stamped "1269"----- | 1, 269. 883 |
| Tps. 2 and 3 N., R. 8 W., closing corner of; stamped "1244"----- | 1, 244. 761 |
| Milepost 46, stamped "1243"----- | 1, 243. 625 |
| Milepost 47, stamped "1235"----- | 1, 235. 373 |
| Milepost 48, stamped "1241"----- | 1, 241. 275 |
| Milepost 49, stamped "1260"----- | 1, 260. 260 |
| Milepost 50, stamped "1297"----- | 1, 297. 834 |
| Milepost 51, stamped "1279"----- | 1, 279. 632 |
| Milepost 52, stamped "1357"----- | 1, 357. 185 |
| T. 3 N., R. 8 W., closing corner of; stamped "1361"----- | 1, 361. 241 |
| Tps. 3 and 4 N., R. 7 and 8 W., corner of; stamped "1362"----- | 1, 362. 787 |
| Milepost 53, stamped "1365"----- | 1, 366. 086 |
| Milepost 54, stamped "1356"----- | 1, 356. 959 |
| Milepost 55, stamped "1335"----- | 1, 335. 513 |
| Milepost 56, stamped "1308"----- | 1, 308. 351 |
| Milepost 57, stamped "1256"----- | 1, 256. 371 |
| Milepost 58, stamped "1328"----- | 1, 328. 726 |
| T. 5 N., Rs. 7 and 8 W., standard corner of; stamped "1333"----- | 1, 333. 386 |
| T. 4 N., Rs. 7 and 8 W., closing corner of; stamped "1307"----- | 1, 307. 543 |
| Milepost 59, stamped "1267"----- | 1, 267. 795 |
| Milepost 60, stamped "1232"----- | 1, 233. 208 |
| Milepost 61, stamped "1127"----- | 1, 127. 287 |
| Milepost 62, stamped "1114"----- | 1, 114. 241 |
| Milepost 63, stamped "1185"----- | 1, 185. 922 |
| Milepost 64, stamped "1174"----- | 1, 174. 647 |
| Tps. 5 and 6 N., Rs. 7 and 8 W., corner of; stamped "1130"----- | 1, 130. 890 |
| Milepost 65, stamped "1176"----- | 1, 176. 671 |
| Milepost 66, stamped "1245"----- | 1, 246. 324 |
| Milepost 67, stamped "1282"----- | 1, 282. 534 |

CHICKASHA QUADRANGLE.

[Latitude 35°-35° 30'; longitude 97° 30'-98°.]

| | Feet. |
|---|------------|
| Milepost 68, stamped "1181"----- | 1, 182.130 |
| Milepost 69, stamped "1217"----- | 1, 217.382 |
| Milepost 70, stamped "1188"----- | 1, 189.180 |
| Milepost 71, stamped "1207"----- | 1, 208.193 |
| Milepost 72, stamped "1108"----- | 1, 108.901 |
| Milepost 73, stamped "1105"----- | 1, 105.532 |
| Milepost 74, stamped "1008"----- | 1, 008.920 |
| Milepost 75, stamped "1116"----- | 1, 116.698 |
| Milepost 76, stamped "1160"----- | 1, 160.008 |
| Tps. 7 and 8 N., Rs. 7 and 8 W., corner of; stamped "1153"----- | 1, 153.190 |
| Milepost 77, stamped "1197"----- | 1, 198.000 |
| Milepost 78, stamped "1185"----- | 1, 185.805 |
| Milepost 79, stamped "1177"----- | 1, 178.117 |
| Milepost 80, stamped "1210"----- | 1, 210.745 |
| Milepost 81, stamped "1259"----- | 1, 260.310 |
| Milepost 82, stamped "1290"----- | 1, 291.089 |
| Tps. 8 and 9 N., R. 8 W., fractional closing corner of; on second standard parallel north, stamped "1293"----- | 1, 294.545 |
| T. 9 N., Rs. 7 and 8 W., standard corner of; stamped "1239"----- | 1, 240.036 |
| T. 8 N., Rs. 7 and 8 W., closing corner of; stamped "1234"----- | 1, 234.829 |
| Milepost 83, stamped "1293"----- | 1, 293.959 |
| Milepost 84, stamped "1294"----- | 1, 295.479 |
| Milepost 85, stamped "1307"----- | 1, 308.374 |
| Milepost 86, stamped "1357"----- | 1, 358.056 |
| Milepost 87, stamped "1411"----- | 1, 411.091 |
| Milepost 88, stamped "1327"----- | 1, 328.409 |
| Tps. 9 and 10 N., Rs. 7 and 8 W., corner of; stamped "1408"----- | 1, 409.598 |
| Milepost 98, stamped "1301"----- | 1, 301.678 |
| Milepost 90, stamped "1366"----- | 1, 367.562 |
| Milepost 91, stamped "1402"----- | 1, 403.537 |
| Milepost 92, stamped "1320"----- | 1, 321.376 |
| Witness corner to M. C., stamped "1300"----- | 1, 301.102 |
| Meander corner, on south bank of Canadian River, stamped "1274"----- | 1, 275.132 |

Pawhuska Quadrangle.

[Latitude 36° 30'-37°; longitude 96°-96° 30'.]

OSAGE COUNTY.

The elevations in the following list were determined by primary leveling extended from the old bench marks along the Osage-Cherokee boundary, the heights of which were determined by a readjustment of leveling in Nowata quadrangle.

The closure errors of this work were excessive and two lines, closing on Osage-Cherokee boundary bench marks on the north and south side of T. 28 N., R. 12 E., are still unadjusted.

The leveling was done in 1908 by H. G. Parry, and in 1912 by H. L. Caldwell and R. M. Copeland.

¹ By Coast and Geodetic Survey precise leveling.

ps. 25 and 26 N., R. 12 E., on Osage-Cherokee boundary line, west and northwest to Okesa.

| | Feet. |
|--|----------|
| ation boundary, 1 mile west of, 20 feet south of well No. 10, o. 3, of Uncle Sam Oil Co., at bottom of large ravine, in foot of ch oak tree; spike marked "779"----- | 777. 41 |
| ation boundary, 1.2 miles west of, 4 feet west of north-south on top of ridge, 0.2 mile west of Uncle Sam Oil Co. Well No. spike in foot of jack oak tree, marked "934.4"----- | 933. 27 |
| N., R. 11 E., at northeast corner; iron post stamped "932" (General Land Office post)----- | 931. 222 |
| N., R. 11 E., northeast corner of sec. 2; iron post stamped ".2" (General Land Office post)----- | 915. 192 |
| N., R. 11 E., at quarter corner north side of sec. 2; iron post ped "843.9" (General Land Office post)----- | 842. 913 |
| N., R. 11 E., northeast corner of sec. 3; small iron post stamped " (General Land Office post)----- | 806. 016 |
| ction of township line and Rock Creek, 1.3 miles northwest of, wagon road from Rock Creek to Okesa, 20 feet north of road, mile north of lone oil well, in top of flat rock marked by id and blazed tree; aluminum tablet stamped "969"----- | 968. 036 |
| ps. 26 and 27 N., R. 12 E., about 2.3 miles southwest of Bartlesville, southwest along Missouri, Kansas & Texas Ry. to Okesa. | |
| reek, east end of bridge across, south of track, on top of stone g, marked "692.8"----- | 691. 51 |
| ville, 6.4 miles southwest of, four telegraph poles south of post 204, west side of right of way, 500 feet south of old wagon creek crossing; iron post stamped "726.2"----- | 724. 797 |
| Okesa southwest along Missouri, Kansas & Texas Ry. to Helagoney, thence southeast along Midland Valley R. R. to Nichols siding. | |
| in front of station door; top of rail----- | 721. 8 |
| 0.9 mile southwest of, 100 feet south of track, 60 feet east of n road, 200 feet southeast of trestle, in top of large flat rock ed by mound; aluminum tablet stamped "757"----- | 756. 203 |
| 4.1 miles southwest of, on base of milepost 212 (telegraph ; 60-d. spike marked "903.2" (on opposite side of post is ad bench mark)----- | 902. 40 |
| id bench mark on above-described milepost 212----- | 902. 92 |
| and 26 N., Rs. 10 and 11 E., corner of townships; probably an post stamped "948.6"----- | 947. 129 |
| 5 miles southwest of, 100 feet west of track at north end of 1,200 feet south of road crossing, on slope of hill, in top of bowlder; aluminum tablet stamped "890"----- | 889. 155 |
| ney, 1.5 miles northeast of, 40 feet north of first telegraph north of milepost 216, on west side of right of way, 6 feet from , in top of large bowlder 6 by 10 feet and 4 feet above ground; inum tablet stamped "796"----- | 795. 077 |
| ney, 1,000 feet east of, at south end of railroad bridge across Creek, on top of stone abutment marked "773.3"----- | 772. 47 |
| ney, 0.7 mile south of, west of road at crossing, north of n road; iron post stamped "763"----- | 762. 829 |

| | Feet. |
|--|-----------|
| Bigheart, 2. 6 miles north of, west side of track, on top of small hill and above cut, 400 feet north of private-road crossing, in top of sandstone rock 6 by 6 by 5 feet; aluminum tablet stamped "771"----- | 770. 822 |
| T. 24 N., R. 10 E., 15 feet south of northwest corner of sec. 1; iron post stamped "775"----- | 775. 085 |
| Bigheart, 1.2 miles south of, 0.3 mile north of Birch Creek bridge. 150 feet west of track, on hillside, in top of rock 6 by 10 by 2 feet marked by mound; aluminum tablet stamped "740"----- | 740. 065 |
| Nichols siding, 1. 5 miles north of, on east side of track, in cut, on point of rock, marked "729.4"----- | 729. 43 |
| From Nichols siding east to Tps. 23 and 24 N., Rs. 12 and 13 E. | |
| T. 24 N., R. 11 E., 135 feet west of corner of secs. 32 and 33, on township line, 100 feet west of Midland Valley R. R. at Nichols siding and water tank, in top of flat rock 6 by 8 by 1.5 feet; aluminum tablet stamped "721"----- | 720. 663 |
| T. 24 N., R. 11 E., secs 32 and 33, on township line; small iron post stamped "712.2" (General Land Office post)----- | 712. 26 |
| T. 24 N., R 11 E., 500 feet east of corner of secs. 35 and 36, on township line, south edge of scattered timber, in top of flat rock flush with ground, marked by mound and blazed tree; aluminum tablet stamped "800"----- | 800. 121 |
| Tps. 23 and 24 N., Rs. 11 and 12 E.; iron post stamped "729" (General Land Office post)----- | 729. 186 |
| T. 24 N., R. 12 E., corner of secs. 32 and 33, on township line, in creek bottom flush with ground, elevation marked on witness tree "681.2"; top of small iron post (General Land Office post)----- | 681.282 |
| From Nelagoney southwest along Missouri, Kansas & Texas Ry. to Wynona, thence southeast to point 7.6 miles east of Wynona, and from point 1 mile west of Nichols siding to Nichols siding. | |
| Nelagoney, at railroad crossing; top of rail----- | 770. 15 |
| Nelagoney, 1.1 miles southwest of railroad crossing, at road crossing, corner of fence west of railroad and south of wagon road; iron post stamped "798"----- | 797. 118 |
| Tps. 24 and 25 N., Rs. 9 and 10 E., 300 feet east of railroad, 300 feet south of road; township corner post (General Land Office post)--- | 894. 746 |
| Nelagoney, 5.5 miles southwest of, fourth telegraph post north of milepost 222, 100 feet west of big cut, top of grade, among large loose rocks, in top of flat rock 2 by 4 by 0.4 feet, marked by mound; aluminum tablet stamped "874"----- | 873. 329 |
| Nelagoney, 8.5 miles southwest of, at crossing of Wynona-Pawhuska road, south of railroad, east of wagon road, 5 feet from telegraph pole; iron post stamped "858"----- | 857. 113 |
| Wynona, in front of station; top of rail----- | 885. 97 |
| NOTE.—An excessive error has been distributed in the remainder of this line to Nichols siding. | |
| Wynona, 1 mile southeast of, on Avant wagon road, 10 feet south of road, on level prairie; iron post stamped "935"----- | 934. 196 |
| Wynona, 3.5 miles east of, at brow of ridge, 8 feet south of road, in open place in scattering timber; iron post stamped "942"----- | 941. 367 |
| Wynona, 5.7 miles east of, 0.4 mile east of forks of three roads, Hominy-Avant-Wynona, 200 feet east of main Avant road, on branch to Bigheart, 10 feet west of road; spike in base of 42-inch oak tree, marked "1008.5"----- | 1,008. 00 |

| | Feet. |
|--|-----------|
| Wynona, 6.8 miles east of, 0.7 mile north of forks of Wynona-Bigheart-Avant roads, on Bigheart road, 20 feet east of road; iron post stamped "988"----- | 987.524 |
| From Wynona southwest, thence north and northwest to Foster. | |
| Tps. 23 and 24 N., R. 9 E., corner of secs. 5 and 31, top of iron post; paint point marked "829.3"----- | 828.480 |
| Tps. 23 and 24 N., Rs. 8 and 9, corner of; probably iron post stamped "792.3"----- | 791.483 |
| T. 24 N., Rs. 8 and 9 E., 250 feet distant N. 30° W. of corner of secs. 13 and 19, in top of sandstone rock 8 by 3 feet and 4 feet above ground; aluminum tablet stamped "956.9", marked with paint.----- | 956.117 |
| In deep ravine course, 6 feet east of drain, in foot of oak tree; head of spike marked "859.3"----- | 858.55 |
| Foraker-Wynona and Blackburn-Pawhuska roads, in first fence east of crossing, 20 feet west of gate, 10 feet southwest of road; probably an iron post marked "1020.6"----- | 1,019.863 |
| Wynona, 9 miles northwest of, on wagon road 0.5 mile southeast of second gate east of Rs. 7 and 8 E., on this road, 40 feet south of road, 10 feet southwest of next following bench mark, marked by monument; iron post stamped "1066.2"----- | 1,065.496 |
| T. 25 N., Rs. 7 and 8 E., 4 feet north of quarter corner between secs. 24 and 19; iron post stamped "1069.4"----- | 1,068.629 |
| Tps. 25 and 26 N., Rs. 7 and 8 E., corner of townships; probably an iron post stamped "1015.6"----- | 1,014.856 |
| T. 26 N., Rs. 7 and 8 E., 2 feet north of corner of secs. 13 and 19; probably an iron post stamped "1038"----- | 1,037.263 |
| Tps. 26 and 27 N., Rs. 7 and 8 E., corner of townships; probably an iron post stamped "967.8"----- | 967.086 |
| Tps. 26 and 27 N., Rs. 7 and 8 E., 1.3 miles north of corner of townships, near top of long flat ridge, head of coulee, S. 15° E. course, on rock, marked by rock monument; point marked "1114.6"----- | 1,113.81 |
| From Nelagoney northwest along Midland Valley R. R. to Foster. | |
| Nelagoney, 2.4 miles northwest of, 450 feet north of railroad, 100 feet north of Nelagoney-Pawhuska wagon road, about 700 feet west of line between ranges 9 and 10 E., 1,000 feet east of road crossing, in top of rock 4 by 8 feet and 2 feet above ground, marked by monument; aluminum tablet stamped "795"----- | 794.155 |
| Pawhuska, east side of, on townsite line, 30 feet south of Pawhuska-Nelagoney wagon road, corner of railroad right of way; iron post stamped "812"----- | 811.20 |
| Pawhuska, in front of door of Midland Valley R. R. station; top of rail----- | 813.8 |
| Pawhuska, on door step of old Agency building----- | 816.75 |
| Pawhuska, 3.5 miles northwest of, 0.3 mile northwest of Savage's house, on point of hill sloping south, 40 feet north of railroad, 8 feet north of fence corner, in top of sandstone bowlder 6 by 10 feet and 4 feet above ground, marked by mound; aluminum tablet stamped "834"----- | 833.170 |
| Pawhuska, 6.3 miles northwest of, 150 feet north of road crossing, 12 feet east of road, 40 feet west of Conway's house, in top of sandstone ledge 10 by 60 feet and 8 feet above ground; aluminum tablet stamped "875"----- | 874.213 |

| | Feet. |
|---|-----------|
| Pawhuska. 9.4 miles northwest of. 1.3 miles northwest of Myers siding. 49 feet south of railroad. 10 feet west of wagon road, at road crossing, at base of small walnut tree; probably an iron post stamped "900"----- | 986.196 |
| Pawhuska. 12.6 miles northwest of. two telegraph poles west of mile-post 215. south of cut. 60 feet north of road, in top of sandstone rock 2 by 2 feet and 2.3 foot above ground, marked by mound; aluminum tablet stamped "906"----- | 995.181 |
| Foster siding. 0.5 mile north of, at road crossing, east of railroad, and south of wagon road; iron post stamped "1105.6"----- | 1,104.878 |
| From point 2.5 miles northwest of Heligumay north to T. 27 N., Rs. 9 and 10 E., corner of secs. 1 and 7, thence west to Foster. | |
| Tps. 25 and 26 N., Rs. 9 and 10 E., at corner of townships; iron post stamped "901" (General Land Office post)----- | 900.504 |
| Tps. 25 and 26 N., Rs. 9 and 10 E., 1.5 miles north by 0.25 mile east of corner of townships, on slope of hill on east side, 2 miles south of Sand Creek. 0.2 mile west of wagon road, on top of rock 2 by 4 feet and 2 feet above ground, marked by mound; paint point marked "891.5"----- | 890.96 |
| T. 26 N., Rs. 9 and 10 E., quarter corner between secs. 13 and 18, 6 feet north of; iron post stamped "806"----- | 905.068 |
| T. 26 N., Rs. 9 and 10 E., corner of secs. 12 and 18, on top of iron post; marked on old corner stone "895.6" (General Land Office post)----- | 894.067 |
| T. 26 N., Rs. 9 and 10 E., at corner of secs. 7 and 12, quarter corner, 20 feet east of fence corner; post marked "900.8" (General Land Office post)----- | 899.896 |
| T. 26 N., Rs. 9 and 10 E., at corner of secs. 1 and 7; iron post marked "898" (General Land Office post)----- | 828.882 |
| T. 26 N., Rs. 9 and 10 E., quarter corner between secs. 1 and 6; top of post marked "921"----- | 920.089 |
| Tps. 26 and 27 N., Rs. 9 and 10 E., corner of townships, at foot of big oak tree; iron post stamped "892" (General Land Office post)----- | 891.486 |
| T. 27 N., Rs. 9 and 10 E., corner of secs. 24 and 30; iron post stamped "904.3" (General Land Office post)----- | 963.314 |
| T. 27 N., Rs. 9 and 10 E., corner of secs. 13 and 19; iron post stamped "1062.9" (General Land Office post)----- | 1,061.947 |
| T. 27 N., Rs. 9 and 10 E., corner of secs. 13 and 19; iron post stamped "1064"----- | 1,062.000 |
| T. 27 N., R. 9 E., 4 feet south of corner of secs. 3, 4, 9, and 10; iron post stamped "1062"----- | 1,061.414 |
| Tps. 27 and 28 N., Rs. 8 and 9 E., corner of townships; iron post stamped "1096" (General Land Office post)----- | 1,095.56 |
| Tps. 27 and 28 N., R. 8 E., corner of secs. 3 and 4, on township line, 2 feet out of ground and set on blanket rock; iron post stamped "1098"----- | 1,094.954 |
| Tps. 27 and 28 N., Rs. 7 and 8 E., corner of; probably an iron post stamped "1151"----- | 1,150.194 |
| From point 1.5 miles north of Foster north, northeast, and east via Elgin to Tps. 26 and 29, R. 12 E., on Cherokee-Osage boundary. ¹ | |
| T. 28 N., Rs. 7 and 8 E., corner of secs. 12, 13, 7, and 18, 1 foot south of; iron post stamped "1103"----- | 1,102.30 |

¹ Error in this line is excessive and is not adjusted, a constant correction only being applied.

| | Feet. |
|--|-----------|
| N. R. 8 E., 1 foot north of corner of secs. 4 and 5; iron post marked stamped "990"----- | 989.552 |
| Foraker-Elgin road forks, 0.8 mile east of, 6 feet north of Foraker-Elgin road, 10 feet west of fence, 4 feet south of fence; probably an iron post stamped "957.2"----- | 956.482 |
| road forks, 2 miles east of, 50 feet south of Elgin road, 200 feet south of small reservoir, on top of sandstone 1 by 3 feet and 1 foot above ground, marked by monument; paint point marked "1"----- | 963.32 |
| N. Rs. 8 and 9 E., 2 feet north of corner of secs. 13 and 18; iron post stamped "995.7"----- | 994.988 |
| 2.5 miles southwest of, on Foraker road, on top of ridge be- tween Buck Creek and Caney River, 20 feet south of road, in loose rock; iron post stamped "1032.4"----- | 1,081.648 |
| N. Rs. 9 and 10 E., closing corner of secs. 13 and 18, 0.5 mile east of Elgin, in center of road; post marked "778" (General Land Office post)----- | 777.255 |
| Arkansas-Kansas boundary, secs. 17 and 18, in road; small iron post marked on fence "781.6" (General Land Office post)----- | 780.881 |
| 2.5 miles southeast of, on wagon road, 0.4 mile southeast of Bolenger's house, at forks of road, 150 feet northeast of log cabin, 50 feet west of gate; probably an iron post stamped "766.4"----- | 765.612 |
| Quaker road, 500 feet east of, 1,000 feet east of white frame house, point in saddle where old road turns east down Caney River, marked by monument, marked "809.3"----- | 808.57 |
| mouth of Caney River, 1 mile east of river at road crossing, 800 feet south of monument on south part of ridge, 200 feet east of corner, 80 feet west of three tall gate posts, in top of sand- stone 2 by 8 by 0.5 feet, marked by mound; aluminum tablet marked "807.5"----- | 806.715 |
| house, 0.3 mile west of, 15 feet south of road, on west slope of hill at rock point, on sandstone 2 by 4 feet and 0.5 foot above ground, marked by monument; marked "796.9"----- | 796.10 |
| house, 0.4 mile west of, south of corner of secs. 27, 28, 33, and 34, 10 feet west of gate, in road to house; probably iron post marked "728.8"----- | 728.014 |
| and 29 N., R. 12 E., corner of Cherokee-Osage boundary, in the quadrangle; old bench mark----- | 794.65 |
| corner of Tps. 27 and 28 N., Rs. 9 and 10 E., to Tps. 27 and 28 N., R. 12 E., on Cherokee-Osage boundary. ¹ | |
| and 28 N., Rs. 9 and 10 E., corner of townships; probably iron post stamped "1052"----- | 1,050.52 |
| and 28 N., R. 10 E., about 500 feet northwest of corner of secs. 3 and 33, northwest corner of field, 10 feet south of old road, west of gate on pasture fence; iron post stamped "964"----- | 963.120 |
| and 28 N., Rs. 10 and 11 E., corner of townships; iron post marked "906" (General Land Office post)----- | 904.525 |
| and 28 N., R. 11 E., 2 feet west of quarter corner between secs. 3 and 34; iron post stamped "804"----- | 803.247 |
| and 28 N., Rs. 11 and 12 E., corner of townships; iron post marked "834" (General Land Office post)----- | 833.335 |

¹ in this line is excessive and is not adjusted, a constant correction only being

| | Feet. |
|---|---------|
| Tps. 27 and 28 N., R. 12 E., closing corner, on Cherokee-Osage boundary line, about 0.3 mile north of Tps. 27 and 28 N., R. 12 E., on Osage Nation, old survey of Cherokee Nation; iron post----- | 892.978 |
| Old Indian Territory bench marks on Osage-Cherokee boundary line with corrected elevations by local adjustment. | |
| Kansas-Cherokee boundary line, closing corner Osage-Cherokee boundary line, T. 29 N., R. 12 E.; iron post----- | 944.691 |
| Osage-Cherokee boundary line, closing corner of Tps. 28 and 29 N., R. 12 E.; iron post----- | 796.146 |
| Osage-Cherokee boundary line, closing corner of Tps. 27 and 28 N., R. 12 E.; iron post----- | 895.122 |
| Osage-Cherokee boundary line, closing corner of Tps. 26 and 27 N., R. 12 E.; iron post----- | 676.599 |
| Osage-Cherokee boundary line, closing corner of Tps. 25 and 26 N., R. 12 E.; iron post----- | 926.588 |
| Osage-Cherokee boundary line, closing corner of Tps. 24 and 25 N., R. 12 E.; iron post----- | 844.330 |
| Osage-Cherokee boundary line, closing corner of Tps. 23 and 24 N., R. 12 E.; iron post----- | 882.165 |

From point 4 miles southeast of Foraker to Foster.

| | |
|--|-----------|
| T. 28 N., R. 8 E., corner between secs. 30 and 31 (south corner), east-west fence, east of track; top of rail----- | 1,162.5 |
| Milepost 221, opposite; top of rail----- | 1,153.4 |
| Foraker, 5.3 miles southeast of, 2.1 miles northwest of Blackland, north-south road crossing, in southeast angle, in southwest edge of warning post; spike marked "U S. 1148"----- | 1,149.73 |
| Foraker, 6.2 miles southeast of, 1.4 miles northwest of Blackland, spike in telegraph pole east of track and at milepost 220, marked "1126"----- | 1,127.66 |
| Milepost 220, 0.2 mile south of, over stone culvert; rail----- | 1,122.3 |
| Blackland (formerly Foster), 0.5 mile north of, east-west road crossing, in southeast angle at fence corner; iron post stamped "1108"----- | 1,104.878 |

From point 8 miles north of Hominy along Missouri, Kansas & Texas Ry. to Wynona.

| | |
|--|---------|
| Hominy, 8.2 miles north of, in bottom of milepost 228, spike marked "834"----- | 833.18 |
| Hominy, 9.2 miles northeast of, in bottom of milepost 227, spike marked "866"----- | 865.26 |
| Wynona, in front of station; top of rail----- | 885.7 |
| Wynona, 1 mile northeast of, on east side of Wynona-Pawhuska wagon road, south side of railroad; iron post stamped "858"----- | 857.113 |
| T. 24 N., R. 9 E., 0.6 mile southeast of northwest corner of sec. 26, on slight slope to west, 400 feet from top of slight ridge; iron post stamped "937"----- | 934.196 |

Claremore, Hominy, Pawnee, Pond Creek, Newkirk, and Washunga Quadrangles.

CREEK, GRANT, KAY, OSAGE, PAWNEE, PAYNE, AND TULSA COUNTIES.

The following elevations were determined by primary leveling and are in agreement with Coast and Geodetic Survey 1912 adjustment.

The leveling was done in Pond Creek, Newkirk, and Washunga quadrangles, in 1911 and 1912, by R. M. Copeland; in Claremore and Hominy quadrangles, in 1911 and 1912, by H. L. Caldwell; in Pawnee quadrangle, in 1905, by E. T. King, and in 1911 and 1912, by R. M. Copeland and H. L. Caldwell.

CLAREMORE QUADRANGLE.

[Latitude 36°-36° 30'; longitude 95° 30'-96°.]

From West Tulsa along St. Louis & San Francisco R. R. to Tulsa. (Line run twice.)

| | Feet. |
|--|---------|
| West Tulsa, 0.2 mile north of, first pier of the railroad bridge, from north bank of Arkansas River, at east end of pier; lettered square cut in stone, marked "U. S. \square B. M." | 636.47 |
| Tulsa, on south side of West First Street, 150 feet southeast of milepost 424, 270 feet from center line of track; square cut on concrete curb, marked "675" | 674.16 |
| Tulsa, at First and Main Streets, in northwest corner of Turner Building; bronze tablet stamped "708" (old b. m.) | 711.045 |
| From Tulsa north along Midland Valley R. R. to point near Skiatook. | |
| Tulsa, 1.8 miles north of, in bottom of milepost 155; spike marked "671" | 670.44 |
| Tulsa, 2.9 miles north of, north pier of railway bridge over Flat Rock Creek, in east end, opposite milepost 156; top of bolt marked "648" | 647.07 |
| T. 20 N., R. 12 E., 0.3 mile west of northeast corner of sec. 24, on east side of railroad and south side of wagon road; iron post stamped "652 Okla" | 651.580 |
| Turley, 1.4 miles south of, in bottom of milepost 158; spike marked "645" | 644.21 |
| Turley, 0.3 mile south of, in bottom of milepost 159; spike marked "656" | 655.03 |
| T. 20 N., Rs. 12 and 13 E., closing corner of secs. 1 and 6; iron post stamped "627" (old b. m.) | 630.207 |
| T. 21 N., R. 12 E., 0.4 mile west of northeast corner of sec. 36, railroad crossing on east-west line between secs. 25 and 36, east side of railroad, south side of wagon road; iron post stamped "621 Okla" | 620.687 |
| Sperry, 1.5 miles south of, in bottom of milepost 162; spike marked "609" | 608.51 |
| Sperry, 0.5 mile south of, in bottom of milepost 163; spike marked "621" | 620.62 |
| T. 21 N., R. 12 E., 0.25 mile west of northeast corner of sec. 14, at crossing of railroad and east-west line between secs. 11 and 14, on east side of railroad and north side of wagon road; iron post stamped "617 Okla" | 616.844 |
| Sperry, 1.6 miles north of, in bottom of milepost 165; spike marked "619" | 618.34 |
| Tps. 21 and 22 N., R. 12 E., on former Indian Territory-Oklahoma State line; iron post stamped "622" (U. S. Land Office mark) | 621.822 |
| T. 22 N., R. 12 E., northeast corner of sec. 22 and southeast corner of sec. 15; iron post stamped "633 Okla" | 632.342 |

HOMINY QUADRANGLE.

[Latitude 36°-36° 30'; longitude 96°-96° 30'.]

From point near Teriton east along St. Louis & San Francisco R. R. to West Tulsa. (Leveled twice.)

| | Feet. |
|---|---------|
| Teriton, 0.4 mile southeast of, west side of north-south private-road crossing, 50 feet north of center of track, 175 feet northwest of milepost 455; iron post stamped "780 Okla"----- | 779.017 |
| Teriton, 2.6 miles southeast of, east side of north-south private-road crossing, on farm owned by T. E. Storm, on west bank of House Creek, 50 feet south of center line of track; iron post stamped "740 Okla"----- | 738.999 |
| Mannford, 0.1 mile southeast of station, east side of north-south highway crossing, 75 feet north of center of track; iron post stamped "740 Okla"----- | 739.004 |
| Mannford, 2.1 miles east of, at west side of north-south highway crossing, 50 feet north of center of track; iron post stamped "772 Okla"----- | 771.125 |
| Keystone, 1.9 miles west of, 210 feet northeast of milepost 444, 50 feet north of center of track, at east end of cut; iron post stamped "696 Okla"----- | 695.789 |
| Keystone, 520 feet east of station, at north-south highway crossing, 75 feet north of center of track, 375 feet west of milepost 442; iron post stamped "684 Okla"----- | 683.668 |
| Keystone, 4 miles southeast of, 70 feet south of milepost 438, south side of railway right of way, 50 feet south of center of track; iron post stamped "683"----- | 682.179 |
| Fisher, 0.2 mile southeast of, on west side of north-south highway crossing, 100 feet south of center of track; iron post stamped "653"----- | 651.960 |
| Lost City, 1.3 miles west of, 50 feet south of center of track, on east side of private-road crossing, 900 feet east of railway bridge over Fisher Creek; iron post stamped "649"----- | 648.506 |
| Price, 370 feet east of northeast corner of station platform, on east side of north-south private-road crossing, 20 feet south of center of main track, between main track and siding, 365 feet west of east end of point of siding; iron post stamped "656"----- | 655.428 |
| Price, 0.6 mile east of, 164 feet east of milepost 428; spike in center of track, marked "648"----- | 647.41 |
| Price, 1.6 miles east of, 212 feet east of milepost 427; spike in center of track, marked "645"----- | 643.95 |
| Price, 2.5 miles east of, 171 feet west of milepost 426; spike in center of track, marked "643"----- | 642.38 |
| West Tulsa, 0.5 mile southwest of, at crossed highways, 324 feet southeast of west point of Y, on St. Louis & San Francisco R. R., 245 feet south of north-south road crossing of same, 375 feet west of east-west road crossing of same, at fence corner in northwest angle of highways; iron post stamped "636 Okla"----- | 635.403 |
| From West Tulsa southwest along St. Louis & San Francisco R. R. to Sapulpa. (Leveled twice.) | |
| West Tulsa, 0.7 mile southwest of, in bottom of second telegraph pole south of milepost 426; spike marked "646"----- | 645.85 |
| Red Fork, 0.4 mile northeast of, in bottom of third telegraph pole south of milepost 427; spike marked "646"----- | 645.42 |

| | Feet. |
|---|---------|
| Red Fork, 0.6 mile southwest of, at bottom of second telegraph pole south of milepost 428; spike marked "681"----- | 680.66 |
| Red Fork, 0.6 mile southwest of, on east side of north-south highway, 100 feet east of center of track; iron post stamped "685"----- | 684.718 |
| Red Fork, 1.5 miles south of, at bottom of milepost 429; spike marked "714"----- | 713.70 |
| New Taneha, 0.6 mile northeast of, at bottom of first telegraph pole northeast of milepost 430; spike marked "763"----- | 762.71 |
| New Taneha, 0.4 mile southwest of, opposite milepost 431, at east end of railway bridge over Nickle Creek, in capstone of pier; square cut, marked "736"----- | 735.12 |
| Taneha, 0.7 mile north of, corner of Tps. 18 and 19 N., Rs. 11 and 12 E.; iron post stamped "747," leaning at about a 60° angle from ground (old b. m.)----- | 749.700 |
| Taneha, 0.4 mile north of, at bottom of milepost 432; spike marked "779"----- | 778.89 |
| Taneha, 0.5 mile south of, at bottom of milepost 433; spike marked "776"----- | 775.06 |
| Taneha, 1.6 miles south of, 200 feet northwest of milepost 434, on north side of east-west highway, 100 feet west of center of track; iron post stamped "719"----- | 718.868 |
| Taneha, 2.6 miles south of, at bottom of milepost 435; spike marked "711"----- | 710.18 |
| Sapulpa, 1.2 miles north of station, at bottom of milepost 436; spike marked "690"----- | 689.15 |
| Sapulpa, 0.2 mile north of station, at bottom of milepost 437; spike marked "729"----- | 728.77 |
| Sapulpa, southwest corner of Main and Hobson streets, on east side of Ripley Hotel, 4 feet above sidewalk and 14 feet south of northeast corner of building; bronze tablet stamped "723" (old b. m.)----- | 725.749 |
| From Sapulpa northwest along highways to point 2 miles east of Mannford. | |
| Sapulpa, 1.5 miles west of, in southeast concrete-filled caisson pier of east-west highway bridge over Rock Creek; top of bolt marked "681"----- | 680.82 |
| Sapulpa, 3.5 miles northwest of, on east side of north-south highway where it makes turn to northwest, about 0.25 mile south of northwest corner of sec. 22, T. 18 N., R. 11 E.; iron post stamped "708 Okla"----- | 707.744 |
| Sapulpa, 5.5 miles northwest of, 700 feet south of northwest corner of sec. 16, T. 18 N., R. 11 E., on east side of highway, in front of farmhouse of W. B. Braninburg, at bottom of gate post; spike marked "828"----- | 827.13 |
| Sapulpa, 6.5 miles northwest of, northwest corner of sec. 17, T. 18 N., R. 11 E., at northeast side of highway; iron post stamped "750 Okla"----- | 749.436 |
| T. 18 N., R. 11 E., northwest corner of sec. 3; highest point of rock, marked "749"----- | 747.97 |
| T. 18 N., R. 11 E., 200 feet east of northwest corner of sec. 7, in bottom of fence post on south side of highway; spike marked "734"----- | 733.31 |
| T. 18 N., R. 10 E., quarter corner north side of sec. 1; iron post stamped "770 Okla"----- | 769.187 |

| | Feet |
|--|----------|
| T. 19 N., R. 10 E., north side of sec. 36, where road crosses section line, 50 feet northwest of gate; top of large rock, marked "806"----- | 805.68 |
| T. 19 N., R. 10 E., northeast quarter of sec. 26, on east end of high east-west divide, 20 feet north of road where it makes turn to west; square cut on flat rock, marked "952"----- | 951.76 |
| T. 19 N., R. 10 E., quarter corner north side of sec. 27; iron post stamped "913 Okla"----- | 912.814 |
| T. 19 N., R. 10 E., sec. 21, 50 feet south of road at point where Keystone Road branches off from Sapulpa-Mannford Trail, 250 feet west of intersection of Gulf Pipe Line and Sapulpa-Mannford Trail, beside large monument of rocks; top of flat rock, marked "1017"----- | 1,016.04 |
| T. 19 N., R. 10 E., northwest corner of sec. 29; iron post stamped "934 Okla"----- | 933.334 |
| T. 19 N., R. 10 E., center of sec. 31, in bottom of corner fence post; spike marked "948"----- | 947.04 |
| Tps. 18 and 19 N., Rs. 9 and 10 E., corner of; iron post stamped "874 Okla"----- | 873.226 |
| T. 18 N., R. 9 E., northwest corner of sec. 1; highest point of rock, marked "860"----- | 859.78 |
| T. 18 N., R. 9 E., northwest corner of sec. 2; highest point of rock, marked "802"----- | 801.61 |
| T. 18 N., R. 9 E., northwest corner of sec. 3; iron post stamped "871 Okla"----- | 870.624 |
| T. 19 N., R. 9 E., 68 feet east by 142 feet north of southwest corner of sec. 27; square cut in top of large sandstone rock, marked "826"----- | 825.62 |
| T. 19 N., R. 9 E., northwest corner of sec. 22; iron post stamped "772 Okla"----- | 771.557 |
| Mannford, 2.1 miles east of, at west side of north-south highway crossing St. Louis & San Francisco R. R., 50 feet north of center of track; iron post stamped "772 Okla"----- | 771.125 |

From point near Cleveland north along St. Louis & San Francisco R. R. to point 7 miles north of Hominy. (Leveled twice.)

| | |
|--|---------|
| Cleveland, 3.7 miles southwest of, crossing of east-west line north side of sec. 25 and Missouri, Kansas & Texas Ry., T. 21 N., R. 7 E., 0.25 mile east of northwest corner of sec. 25, south side of wagon road, east side of railroad; iron post stamped "865 Okla"----- | 864.471 |
| Cleveland, 2.9 miles southwest of, at bottom of milepost 251; spike marked "838"----- | 836.87 |
| Cleveland, 1.8 miles southwest of, at bottom of milepost 250; spike marked "786"----- | 785.43 |
| Cleveland, 1 mile southwest of, north-south line on west side of sec. 17, T. 21 N., R. 8 E., crossing Missouri, Kansas & Texas Ry., 0.2 mile south of northwest corner of sec. 17, east side of wagon road, south side of railroad; iron post stamped "754 Okla"----- | 753.206 |
| Cleveland, 0.25 mile northeast of, at bottom of milepost 248; spike marked "733"----- | 732.51 |
| Cleveland, 1.1 miles east of, at bottom of milepost 247; spike marked "712"----- | 711.57 |
| Osage, 0.4 mile south of, northwest corner of sec. 23, T. 21 N., R. 8 E.; iron post stamped "706 Okla"----- | 705.505 |
| Osage, 0.2 mile north of, at bottom of milepost 245; spike marked "727"----- | 725.41 |

| | Feet. |
|--|---------|
| Osage, 1.1 miles north of, at bottom of milepost 244; spike marked "766"----- | 764.94 |
| Osage, 2.2 miles north of, 0.2 mile east of milepost 243, at east end of railroad culvert; square cut on capstone, lettered "U. S. <input type="checkbox"/> B. M."----- | 829.96 |
| Osage, 2.9 miles north of, quarter corner north side of sec. 1, T. 21 N., R. 8 E.; iron post stamped "847 Okla"----- | 845.822 |
| Osage, 4.3 miles north of, at bottom of milepost 241; spike marked "914"----- | 913.33 |
| Hominy, 3.6 miles southeast of, quarter corner north side of sec. 30, T. 22 N., R. 9 E.; iron post stamped "855 Okla"----- | 853.988 |
| Hominy, 2.7 miles south of, at bottom of milepost 239; spike marked "815"----- | 814.67 |
| Hominy, 1.7 miles south of, at bottom of milepost 238; spike marked "817"----- | 816.08 |
| Hominy, 1.5 miles south of, at Missouri, Kansas & Texas Ry. crossing of east-west line on north side of sec. 13, T. 22 N., R. 8 E.; top of south end of west rail marked " <input type="checkbox"/> 806"----- | 805.30 |
| Hominy, 0.7 mile south of, crossing of east-west line north side of sec. 12, T. 22 N., R. 8 E., and Missouri, Kansas & Texas Ry., 150 feet east of center of track, 0.4 mile east of northwest corner NW. $\frac{1}{4}$ sec. 12, on north side of east-west highway, west side of north-south highway; iron post stamped "784 Okla"----- | 783.003 |
| Hominy, 1 mile north of, at bottom of milepost 235; spike marked "786"----- | 784.75 |
| Hominy, 2 miles north of, at bottom of milepost 234; spike marked "818"----- | 817.35 |
| Hominy, 2.75 miles north of, northwest corner of sec. 30, T. 23 N., R. 9 E.; iron post stamped "823 Okla"----- | 822.466 |
| Hominy, 4.25 miles north of, at bottom of milepost 232; spike marked "770"----- | 769.84 |
| Hominy, 5.25 miles north of, at bottom of milepost 231; spike marked "773"----- | 772.43 |
| Hominy, 6.25 miles north of, at bottom of milepost 230; spike marked "790"----- | 789.39 |
| T. 23 N., R. 9 E., quarter corner north side of sec. 5; iron post stamped "823 Okla"----- | 821.983 |

From Osage southeast along Missouri, Kansas & Texas Ry. to Keystone.

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|---|---------|
| Osage, northwest corner of sec. 23, T. 21 N., R. 8 E.; iron post stamped "706 Okla"----- | 705.505 |
| Osage, 1.8 miles southeast of, at bottom of milepost 247; spike marked "705"----- | 704.32 |
| Osage, 2.5 miles southeast of, crossing of north-south line between secs. 25 and 30, T. 21 N., Rs. 8 and 9 E., and Missouri, Kansas & Texas Ry., 0.15 mile south of northwest corner of sec. 30, on north side of railroad; iron post stamped "706 Okla"----- | 704.871 |
| Osage, 3.8 miles southeast of, at bottom of milepost 249; spike marked "701"----- | 700.05 |
| Indian, 0.25 mile southeast of, at bottom of milepost 250; spike marked "698"----- | 697.17 |
| Prue, 1.6 miles northwest of, 400 feet east of milepost 251, east side of north-south road, north side of railroad, at crossing; iron post stamped "702 Okla"----- | 701.411 |

| | Feet. |
|--|---------|
| Prue, 0.6 mile west of, at bottom of milepost 252; spike marked "692"----- | 691.00 |
| Prue, 0.5 mile east of, at bottom of milepost 253; spike marked "699"----- | 697.98 |
| Prue, 0.9 mile east of, crossing of north-south line between secs. 1 and 2, T. 20 N., R. 9 E., and Missouri, Kansas & Texas Ry., 600 feet south of quarter corner on west side of sec. 1, west side of wagon road, north side of railroad; iron post stamped "690 Okla"----- | 689.699 |
| Prue, 1.5 miles east of, at bottom of milepost 254; spike marked "682"----- | 681.17 |
| Prue, 2.5 miles east of, at bottom of milepost 255; spike marked "692"----- | 691.19 |
| Prue, 3.5 miles southeast of, at bottom of milepost 256; spike marked "706"----- | 705.36 |
| Prue, 4.3 miles southeast of, quarter corner west side of sec. 9, T. 20 N., R. 10 E.; iron post stamped "682 Okla"----- | 681.455 |
| Prue, 5.8 miles southeast of, at bottom of milepost 258; spike marked "681"----- | 680.28 |
| Appalachia, 3 miles northwest of, at bottom of milepost 259; spike marked "676"----- | 676.74 |
| Appalachia, 2 miles northwest of, at bottom of milepost 260; spike marked "681"----- | 680.19 |
| Appalachia, 1.5 miles northwest of, in southeast quarter of sec. 29, T. 20 N., R. 10 E., at east-west road crossing Missouri, Kansas & Texas Ry., on north side of wagon road, east side of railroad; iron post stamped "678 Okla"----- | 677.602 |
| Appalachia, 1 mile northwest of, at bottom of milepost 261; spike marked "684"----- | 683.49 |
| Appalachia, 0.5 mile northwest of, at edge of right of way, Tulsa-Osage County line, at bottom of white post; spike marked "679"----- | 678.88 |

From Mud Creek north to corner of sec. 3, T. 22 N., R. 10 E.

| | |
|--|---------|
| T. 20 N., R. 10 E., north side of sec. 5, on top of ridge west side of Mud Creek, 100 feet east of center of trail, in bottom of 18-inch oak tree; spike marked "855"----- | 854.08 |
| T. 21 N., R. 10 E., quarter corner north side of sec. 32; iron stake marked "863"----- | 862.31 |
| T. 21 N., R. 10 E., quarter corner north side of sec. 29; iron post stamped "829"----- | 828.266 |
| T. 21 N., R. 10 E., quarter corner north side of sec. 17; iron post stamped "853"----- | 852.741 |
| T. 21 N., R. 10 E., quarter corner west side of sec. 9; iron stake marked "826"----- | 825.63 |
| T. 22 N., R. 10 E., northwest corner of sec. 34; iron post stamped "824"----- | 823.369 |
| T. 22 N., R. 10 E., northwest corner of sec. 22; iron post stamped "682"----- | 682.003 |
| T. 22 N., R. 10 E., quarter corner west side of sec. 10; iron post stamped "733"----- | 732.400 |
| T. 22 N., R. 10 E., northwest corner of sec. 10; iron stake marked "825"----- | 824.62 |

From Tulsa north along Midland Valley R. R. to point north of Skiatook, thence west along highways to sec. 12, T. 23 N., R. 8 E.

| | Feet. |
|--|---------|
| Skiatook, 1.5 miles south of, in bottom of milepost 167; spike marked "642"----- | 641.39 |
| Skiatook, 0.5 mile south of, in bottom of milepost 168; spike marked "650"----- | 649.85 |
| Skiatook, 1.9 miles north of, in bottom of milepost 170; spike marked "637"----- | 638.00 |
| Skiatook, 2.8 miles north of, directly opposite milepost 171, railway bridge, top of lag bolt on east end of pier; marked "653"----- | 652.72 |
| Skiatook, 3.9 miles north of, in bottom of milepost 172; spike marked "659"----- | 658.46 |
| Tps. 22 and 23 N., R. 12 E., corner of secs. 3, 4, 33, and 34; iron post stamped "649 Okla"----- | 648.927 |
| T. 22 N., R. 12 E., 0.25 mile west of northeast corner of sec. 5, at crossing of section line and north-south wagon road, at bottom of 18-inch oak tree; spike marked "940"----- | 939.83 |
| T. 23 N., R. 12 E., about 0.4 mile east of northwest corner of sec. 32, section line crossing north-south wagon road, in bottom of 9-inch oak tree; spike marked "956"----- | 955.29 |
| Tps. 22 and 23 N., Rs. 11 and 12 E.; General Land Office post stamped "927"----- | 926.957 |
| T. 22 N., R. 11 E., northwest corner of sec. 2; iron stake marked "910"----- | 909.02 |
| T. 22 N., R. 11 E., northwest corner of sec. 3; iron post stamped "832 Okla"----- | 831.365 |
| T. 22 N., R. 11 E., northwest corner of sec. 4, at fence corner; flat rock marked "921"----- | 920.36 |
| T. 22 N., R. 11 E., quarter corner north side of sec. 5; iron stake marked "851"----- | 850.93 |
| Tps. 22 and 23 N., Rs. 10 and 11 E.; General Land Office iron post stamped "834"----- | 833.672 |
| T. 23 N., R. 10 E., about on section line west side of sec. 36, east edge of timber, north side of east-west wagon road, on top of ridge, at bottom of 12-inch oak tree; spike marked "892"----- | 891.79 |
| T. 22 N., R. 10 E., quarter corner north side of sec. 3; iron stake marked "722"----- | 721.45 |
| T. 22 N., R. 10 E., northwest corner of sec. 3; iron post stamped "830 Okla"----- | 829.738 |
| T. 23 N., R. 10 E., west side of sec. 10, 0.3 mile north of southwest corner, 50 feet north of east-west road, at bottom of 11-inch oak tree; spike marked "881"----- | 880.29 |
| T. 23 N., R. 10 E., 0.1 mile north of southwest corner of west side of sec. 32, 150 feet south of wagon road, top of large rock, on section line; oak tree blazed and painted "930"----- | 929.93 |
| Tps. 22 and 23 N., Rs. 9 and 10 E.; General Land Office iron post stamped "820"----- | 819.556 |
| T. 22 N., R. 9 E., northwest corner of sec. 3; iron post stamped "740 Okla"----- | 740.063 |
| T. 22 N., R. 9 E., northwest corner of sec. 4; iron stake marked "748"----- | 747.50 |

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|---|---------|
| T. 22 N., R. 9 E. northwest corner of sec. 5; iron stake marked "775" | Prot. |
| T. 22 N., R. 9 E. crossing of Missouri, Kansas & Texas Ry. in sec. 12; iron post stamped "783 Okla" | 774.23 |
| | 783.008 |

PAWNEE QUADRANGLE.

[Latitude 36°-36° 30'; longitude 96° 30'-97°.]

From point near Ripley east along Atchison, Tulpah & Santa Fe Ry. to point near Cushing.

| | |
|--|---------|
| Ripley, 1.25 miles southeast of, 15 feet east of section corner (monument destroyed), 5 feet east of track; iron post stamped "818 Adj 1903" | 817.161 |
| Ripley, 2.0 miles northeast of, at north-south public-road crossing, in northwest fence corner on railroad right of way; iron post stamped "815 Adj 1903" | 813.693 |
| Ripley, 5.5 miles east of, at north-south public-road crossing, in southeast fence corner; iron post stamped "812 Adj 1903" | 811.228 |
| Cushing, 2.0 miles northwest of, north-south road crossing, 750 feet northeast of milepost 48, in southwest fence corner; iron post stamped "910 Adj 1903" | 900.181 |

From Cushing northeast along Missouri, Kansas & Texas Ry. to Jennings.
(Leveled twice.)

| | |
|---|---------|
| Cushing, 0.8 mile northeast of, 6 feet west of center of track, in switch log at east end of passing track; spike marked "917" | 916.44 |
| Cushing, 2.7 miles northeast of, southwest corner of sec. 23, T. 18, R. 5 E., at crossed highways, 300 feet southeast of railway; iron post stamped "826 Okla" | 825.484 |
| Norfolk, 0.25 mile southwest of, at north side of east-west highway crossing, 50 feet east of center of track; iron post stamped "813 Okla" | 811.900 |
| Yale, 0.7 mile south of station, south side of east-west highway crossing, 80 feet west of center of track, 76 feet east of center of Santa Fe Ry. track; iron Missouri, Kansas & Texas Ry. post stamped "793 Okla" | 792.590 |
| Yale, 2.4 miles north of, north side of east-west crossing, 24 feet east of center of track; iron post stamped "886 Okla" | 886.058 |
| Yale, 3.8 miles northeast of, at southeast corner of sec. 33, T. 20 N., R. 6 E., 585 feet east of intersection of center line of Missouri, Kansas & Texas Ry. and Payne-Pawnee county line; iron post stamped "809 Okla" | 808.051 |
| Yale, 5.25 miles northeast of, 200 feet southeast of milepost 264, 20 feet south of center of track, 40 feet east of bridge; square cut in flint rock, marked "819" | 818.06 |
| Jennings, 2.0 miles southwest of, at east side of north-south private-road crossing, 50 feet south of center of track, 50 feet north of east-west highway, 40 feet west of bank of Kenny Creek, 530 feet west of milepost 263; iron post stamped "808 Okla" | 807.693 |
| Jennings, 0.2 mile northeast of station, on south side of private road crossing, 100 feet northwest of center of track, 73 feet west of milepost 260; iron post stamped "820 Okla" | 827.295 |

| | Feet. |
|--|---------|
| 150 feet northwest of station, in center of east-west road, set southwest of center of track; iron post stamped "855" | 854.784 |
| Remains along St. Louis & San Francisco R. R. to point 3.4 miles northeast of Hallett. (Levelled twice.) | |
| 0.9 mile northwest of, at bottom of milepost 460; spike ad "883" | 882.88 |
| 0.6 mile southwest of, at bottom of milepost 257; spike ad "935" | 934.16 |
| 0.4 mile northeast of, at bottom of milepost 256; spike ad "942" | 941.64 |
| 0.8 mile northeast of, west side of sec. 3, T. 20 N., R. 7 E., along west boundary of sec. 3 and Missouri, Kansas & Texas east side of wagon road, north side of railroad, 0.3 mile northwest corner of sec. 3; iron post stamped "943 Okla" | 942.311 |
| 1.5 miles northeast of, at bottom of milepost 255; spike ad "968" | 967.88 |
| 2.5 miles northeast of, at bottom of milepost 254; spike ad "955" | 958.96 |
| 3.4 miles northeast of, at bottom of milepost 253; spike ad "919" | 918.11 |
| Ralston south along Atchison, Topeka & Santa Fe Ry. to Hallett. | |
| 0.9 mile south of, in cut, 2,350 feet south of east-west road along track; point on top of stone milepost 44 marked "U. S." | 830.02 |
| 1.9 miles south of, 2,000 feet southeast of north-south road along track; point on top of stone milepost 45 marked "U. S." | 835.34 |
| at 46, top of | 819.8 |
| 3.2 miles south of, 1,600 feet south of milepost 46, at east-road crossing track, in northeast angle near fence corner; post stamped "813" | 812.368 |
| 3.9 miles south of, 1,500 feet south of east-west road crossing top of stone milepost 47 marked "U. S. 806" | 806.89 |
| 4.9 miles south of, 1,000 feet north of Jobes siding; point on top of stone milepost 48 marked "U. S. 816" | 815.31 |
| 5.9 miles south of, 0.8 mile south of Jobes siding, 100 feet west of milepost 49, near west property fence; iron post ad "835" | 835.070 |
| 7 miles south of, 1,000 feet south of north-south road crossing track; point on top of stone milepost 50, marked "U. S. 867" | 866.81 |
| siding, 1.2 miles north of, near milepost 51, south bolt in east rail of trestle 50 D; marked "U.S.B.M. 846" | 845.24 |
| siding, north end, near milepost 52, bolt on each side of switch marked "U. S." | 837.11 |
| southeast corner of hotel across track from station; iron stamped "834" | 833.419 |
| in front of station; top of rail | 848.4 |
| 0.7 mile south of; point on top of stone milepost 53 marked "802" | 861.00 |

| | Feet. |
|---|----------|
| Skedee, 1.7 miles southwest of, 300 feet northeast of Esau Junction; point on top of milepost 54 marked "U. S. 859"----- | 858. 47 |
| Esau Junction, railway branch to Pawnee; top of rail at switch----- | 855. 8 |
| Skedee, 2.6 miles south of, 530 feet north of milepost 55, where track passes through small cut, 2,300 feet north of Black Bear Creek Bridge 55 A, near west property line; iron post stamped "848"----- | 847. 135 |
| Skedee, 2.7 miles south of, opposite milepost 55, 2 feet west of track; top of rail driven in ground----- | 832. 55 |
| Bridge 55 A over Black Bear Creek; point on west side of south pier, marked "U. S. 826" (railroad bench mark)----- | 825. 47 |
| Skedee, 3.7 miles south of; point on top of stone milepost 56 marked "U. S. 817" (railroad bench mark)----- | 816. 73 |
| Skedee, 4.7 miles south of, 1,700 feet south of Cody; point on top of stone milepost 57 marked "U. S. 819"----- | 819. 06 |
| Skedee, 5.8 miles south of, 650 feet north of crossing of St. Louis & San Francisco track; point on top of stone milepost 58 marked "U. S. 816" (railroad bench mark)----- | 845. 33 |
| Crossing of the Eastern Oklahoma branch and the St. Louis & San Francisco R. R.; rail----- | 845. 4 |
| Skedee, 5.8 miles south of, 1,000 feet east of crossing of the St. Louis & San Francisco R. R. and the Eastern Oklahoma branch, in northeast angle of road crossing former railroad, 75 feet north of track, near east road fence; iron post stamped "862"----- | 861. 195 |
| Crossing of the Eastern Oklahoma branch and the St. Louis & San Francisco R. R., 1.2 miles east of, north-south road crossing track, in northwest angle, 30 feet north of track, on west side of road embankment; point on top of large flat rock marked "U. S. 900"----- | 899. 46 |
| Casey, 0.3 mile west of, 150 feet east of north-south road crossing, near telegraph pole; point on stone 2 feet high marked "U. S. 942"----- | 941. 96 |
| Casey, in front of station; top of rail----- | 934. 2 |
| Casey, 1.2 miles east of, north-south road crossing, in southeast angle, near fence corner, 30 feet south of track; iron post stamped "881"----- | 880. 354 |
| Valley Station, 2.1 miles east of Casey, east-west track, 10 feet south of crossing post, north corner of gravel platform; top of driftbolt through timbers marked "U. S. 915"----- | 914. 78 |
| Casey, 3 miles east of, 1,300 feet northwest of road crossing, west end of small fill, 6 feet north of south property fence, 50 feet south of marked telegraph pole, on top of gray sandstone; square hole marked "U. S. 861"----- | 860. 38 |
| Casey, 4.4 miles southeast of, east end of steel bridge over creek and north-south road, 75 feet northeast of, near north property fence; iron post stamped "809"----- | 808. 800 |
| T. 21 N., R. 7 E., corner of secs. 28, 33, 32, and 29; bolt driven flush with ground at center of crossroad, marked on rock at fence corner in southwest angle "U. S. 837"----- | 836. 34 |
| Casey, 6.2 miles southeast of, 1,000 feet southeast of Greenup station signboard, at milepost 463; spike in telegraph pole marked "U. S. 857"----- | 856. 60 |
| Casey, 6.6 miles southeast of, east side of north pier of water tank, at southeast corner; square marked "U. S. 872"----- | 871. 05 |
| Milepost 462; spike in, marked "U. S. 892"----- | 891. 77 |

| | Feet. |
|--|--------|
| Hallett station, north corner of building, 20 feet north of, near east rail; square on concrete wall marked "U. S. 905"----- | 904.34 |
| Hallett, in front of Missouri, Kansas & Texas Ry. station; top of rail----- | 941.6 |
| Hallett, 0.4 mile east of, in bottom of milepost 256; spike marked "U. S. 842 B. M."----- | 941.62 |

POND CREEK QUADRANGLE.

[Latitude 36° 30'–37°; longitude 97° 30'–98°.]

From Medford east along Atchison, Topeka & Santa Fe Ry. to Deer Creek station. (Leveled twice.)

| | |
|--|-----------|
| Medford, outer row of supports on north side of water tank, in southwest corner of east support; bottom of triangular hole----- | 1,099.161 |
| Medford, crossing of Atchison, Topeka & Santa Fe and Chicago, Rock Island & Pacific tracks----- | 1,090.4 |
| Medford, 60 feet from east track of Atchison, Topeka & Santa Fe Ry. and Chicago, Rock Island & Pacific Ry., in southeast angle, in Texas limestone post; bottom of square hole, lettered "U. S. \square B. M." (C. & G. S. b. m. S)----- | 1,087.265 |
| Medford, 1 mile east of, north of track; top of northwest bolt holding semaphore post, marked "⊙ U. S."----- | 1,084.26 |
| Medford, 2 miles east of, on small trestle marked "104 A"; top of last bolt at northeast corner, on guard rail----- | 1,085.52 |
| Medford, 3.3 miles east of, in southeast angle of road crossing, in top of second fence post (30 feet) west of second telegraph pole (200 feet) east of road; spike bent over----- | 1,083.60 |
| Medford, 3.3 miles east of, in southeast angle of road crossing, 140 feet south of southeast fence corner; iron post stamped "1080"----- | 1,079.892 |
| Medford, 4.3 miles east of, in southeast angle of road crossing, in first telegraph pole east of road (10 feet); spike marked "U. S. 1085"----- | 1,084.86 |
| Medford, 5.2 miles east of, in northeast angle of road crossing, in fence post 5 feet north of north rail under high end of cattle guard, on north side of post; head of a very twisted spike, marked "U. S. 1086"----- | 1,085.14 |
| Medford, 6.2 miles east of, in southeast corner of road crossing, on brace from corner of fence toward cattle guard, 1 foot from north (lower) end; cut on west plank----- | 1,080.96 |
| Medford, 6.2 miles east of, in northeast angle of road crossing, 10 feet north of corner fence; iron post stamped "1081"----- | 1,080.659 |
| Hutchinson, south of milepost 109; top of vertical rail----- | 1,110.14 |
| Numa, 0.02 mile east of station, at bottom of south brace of mail crane; top of bolt----- | 1,117.20 |
| Numa, 0.1 mile east of station, north of track, on south side of switch stand; top of east spike, marked "U. S. 1116"----- | 1,115.83 |
| Numa, 0.9 mile east of, in southeast angle of road crossing, in first telegraph pole east of road; spike marked "U. S. 1104"----- | 1,103.25 |
| Numa, 1.8 miles east of, in southwest angle of road crossing, spike in second telegraph pole west of road----- | 1,107.92 |
| Numa, 1.8 miles east of, in southwest angle of road crossing, 1 foot north of fence corner; iron post stamped "1108"----- | 1,107.729 |
| Hutchinson, south of milepost 112; top of vertical rail----- | 1,105.98 |

| | Feet |
|--|-----------|
| Numa, 2.8 miles east of, in southeast angle of road crossing, in first telegraph pole east of road; spike marked "U. S. 1103"..... | 1, 102.74 |
| Hutchinson, south of milepost 113; top of vertical rail..... | 1, 099.10 |
| Numa, 3.7 miles east of, in southeast angle of road crossing, in telegraph pole east of road; spike marked "U. S. 1094"..... | 1, 093.55 |
| Deer Creek, in front of station; top of rail..... | 1, 087.4 |

NEWKIRK QUADRANGLE.

[Latitude 36° 30'-37°; longitude 97°-97° 30'.]

From Deer Creek east along Atchison, Topeka & Santa Fe Ry. to point 2.3 miles east of Newkirk. (Leveled twice.)

| | |
|--|------------|
| Deer Creek, under west wall of station; a 4 by 6 inch timber in north end of which is a spike marked "U. S. 1088"..... | 1, 087.29 |
| Deer Creek, 0.3 mile east of station, in southeast corner of road crossing, 1 foot east of corner fence post; iron post stamped "1085"..... | 1, 084.576 |
| Deer Creek, 0.3 mile east of, in southeast corner of road crossing, in north side of corner fence post; spike..... | 1, 084.46 |
| Hutchinson, south of milepost 115; top of vertical rail..... | 1, 083.00 |
| Deer Creek, 1.3 miles east of, in southeast corner of road crossing, in south side of corner fence post; spike marked "U. S. 1045"..... | 1, 044.43 |
| Deer Creek, 2.2 miles east of, in southeast corner of road crossing, in south side of corner fence post; spike marked "U. S. 1083"..... | 1, 082.88 |
| Hutchinson, south of milepost 117; top of vertical rail..... | 1, 078.4 |
| Deer Creek, 3.2 miles east of, in southwest corner of road crossing, 100 feet south of corner fence; iron post stamped "1087"..... | 1, 086.844 |
| Deer Creek, 3.2 miles east of, in southeast corner of road crossing, on north side of crossing warning post; spike..... | 1, 083.21 |
| Nardin, in front of station; top of rail..... | 1, 083.9 |
| Nardin, at north edge of station platform, 25 feet east of building, 2 feet south of track; spike on pile, marked "U. S. 1084"..... | 1, 083.47 |
| Nardin, 0.8 mile east of station, 400 feet east of milepost 119, in telegraph pole south of track; spike..... | 1, 086.49 |
| Nardin, 1.1 miles east of, in southwest corner of crossing, in east face of corner fence post; spike marked "U. S. 1095"..... | 1, 094.44 |
| Nardin, 2.2 miles east of, in northeast angle of road crossing, in west face of fence post under north end of cattle guard; spike..... | 1, 081.19 |
| Nardin, 2.2 miles east of, in southwest corner of road crossing, 1 foot north of fence corner; iron post stamped "1084"..... | 1, 083.886 |
| Nardin, 3.1 miles east of, in southeast corner of road crossing, in north face of post 3 feet east of fence corner; spike marked "U. S. 1067"..... | 1, 087.07 |
| Nardin, 4 miles east of, in southeast corner of road crossing, in south face of post under cattle guard; spike marked "U. S. 1065"..... | 1, 065.04 |
| Nardin, 5.1 miles east of, in northeast corner of road crossing, on brace from corner fence toward cattle guard, on west edge of plank; point..... | 1, 050.22 |
| Nardin, 5.1 miles east of, in southwest corner of road crossing, 100 feet south of corner fence, corner common to secs. 24 and 19, T. 27 N., Rs. 1 and 2 W.; iron post stamped "1053"..... | 1, 052.696 |
| Nardin, 6.1 miles east of, southeast corner of road crossing, in post 1 foot south of corner fence; spike marked "U. S. 1046"..... | 1, 045.06 |
| Nardin, 7.1 miles east of, in southeast corner of road crossing, in north side of telegraph pole, 15 feet east of road at fence corner; spike marked "U. S. 1062"..... | 1, 061.66 |

| | Feet. |
|---|-------------|
| Nardin, 7.6 miles east of, at curve on Atchison, Topeka & Santa Fe Ry. toward southeast, at culvert 125 B, 18½ inches south of north-east corner of culvert; nail----- | 1, 034. 78 |
| Blackwell, at Blackwell and 12th avenues, 25 feet southwest of T, on northwest side of telephone post 1 foot above ground; spike marked "U. S. 1026"----- | 1, 026. 45 |
| Blackwell, in southwest corner of lawn on south side of city hall, 20 feet south of southwest corner of building; iron post stamped "1020"----- | 1, 019. 635 |
| Blackwell, 0.7 mile northeast of, trestle over Chilkaskia River, in west end of guard rail on south side; top of bolt marked "U. S. 1004"----- | 1, 003. 48 |
| Blackwell, 1.4 miles northeast of, secs. 13 and 14, T. 27 N., R. 1 W., in northwest corner of road crossing, in south side of warning post; spike marked "U. S. 999"----- | 998. 56 |
| Blackwell, 2.6 miles northeast of, corner of secs. 7, 12, 13, and 18, T. 27 N., Ra. 1 E and 1 W., in northwest corner of crossroads, 400 feet east of tracks; iron post stamped "1022"----- | 1, 021. 647 |
| Blackwell, 3.6 miles northeast of, 400 feet southwest of crossing, 1 foot above ground in telephone post; nail marked "U. S. 1037"----- | 1, 036. 54 |
| Blackwell, 4 miles northeast of, corner of secs. 5, 6, 7, and 8, T. 27 N., R. 1 E., in northeast angle of road crossing, in north side of post of cattle guard; nail marked "U. S. 1047"----- | 1, 046. 82 |
| Blackwell, 5.1 miles northeast of, in north face of 6th post west of second telegraph pole west of milepost 533; spike marked "U. S. 1064"----- | 1, 064. 20 |
| Blackwell, 5.6 miles northeast of, secs. 32, 33, 4 and 5, Tps. 27 and 28 N., R. 1 E., in southwest corner of road crossing, 30 feet south of tracks; iron post stamped "1079"----- | 1, 079. 415 |
| Blackwell, 6.8 miles northeast of, secs. 28 and 33, T. 28 N., R. 1 E., in northeast corner of road crossing, in east face of corner fence post; spike marked "U. S. 1122"----- | 1, 121. 62 |
| Blackwell, 7.2 miles northeast of, secs. 27 and 28, T. 28 N., R. 1 E., 350 feet northeast of road crossing, 180 feet northeast of milepost 531, in north side of telegraph pole; spike marked "U. S. 1129"----- | 1, 129. 45 |
| Peckham, 100 feet south of southeast corner of station, at corner of fence south of road; iron post stamped "1107"----- | 1, 107. 433 |
| Peckham, 0.6 mile northeast of, in southeast corner of road crossing, in west end of cattle guard; spike marked "U. S. 1128"----- | 1, 127. 67 |
| Peckham, 1 mile northeast of, in northeast angle of east-west road crossing, in west face of telephone pole; spike marked "U. S. 1143"----- | 1, 143. 42 |
| Peckham, 2.1 miles northeast of, in northwest angle of east-west road crossing, 60 feet west of track; spike in telegraph pole, marked "U. S. 1166"----- | 1, 166. 39 |
| Peckham, 3.4 miles northeast of, secs. 1 and 12, T. 28 N., R. 1 E., in northwest corner of road crossing, 100 feet west of track, near stone fence corner; iron post stamped "1163"----- | 1, 162. 767 |
| T. 28 N., Ra. 1 and 2 E., corner of secs. 1, 6, 7, and 12, in northeast corner of crossroads, in top of stone fence post; cut marked "U. S. 1168"----- | 1, 168. 33 |
| T. 28 N., R. 2 E., corner of secs. 5, 6, 7, and 8, 450 feet west of, on southeast end of northeast wing wall of small bridge; cut marked "U. S. 1180"----- | 1, 180. 06 |

| | Feet. |
|---|------------|
| T. 28 N., R. 2 E., corner of secs. 4, 5, 8, and 9, in northeast corner of crossroads, in telephone pole 1 foot south of east brace to corner fence post; copper nail marked "U. S. 1139"----- | 1, 139.28 |
| T. 28 N., R. 2 E., corner of secs. 3, 4, 9, and 10, in northeast angle of crossroads, in north brace to stone fence corner; chiseled square marked "U. S. 1148"----- | 1, 152.27 |
| T. 28 N., R. 2 E., quarter corner between secs. 9 and 10, in center of road; top of stone----- | 1, 148.2 |
| T. 28 N., R. 2 E., corner of secs. 9, 10, 15, and 16, in northeast corner of crossroads, 4 feet southeast of stone fence corner; iron post stamped "1144"----- | 1, 144.312 |
| T. 28 N., R. 2 E., corner of secs. 10, 11, 14, and 15, in northeast corner of crossroads, southwest of and at base of stone fence corner; top of stone marked on east brace to corner "U. S. 1154"----- | 1, 153.68 |
| T. 28 N., R. 2 E., corner of secs. 14, 15, 23, and 24, in northeast corner of crossroads, on top of corner fence post; temporary bench mark, marked "U. S. 1154"----- | 1, 154.48 |
| T. 28 N., R. 2 E., 0.3 mile west of quarter corner between secs. 14 and 23, in fence post north of road; spike marked "U. S. 1138"----- | 1, 138.48 |
| T. 28 N., R. 2 E., quarter corner between secs. 14 and 23, at T road south, in post 10 feet west of division fence north of road; temporary bench mark----- | 1, 156.58 |
| T. 28 N., R. 2 E., center of sec. 23, 0.5 mile north of Newkirk courthouse, 0.3 mile west of crossroads at northwest corner of town, in northwest angle on top of fence post; temporary bench mark----- | 1, 139.83 |
| Newkirk, 1 foot north of street end of east sidewalk to courthouse, 1 foot west of main street sidewalk; iron post stamped "1154"----- | 1, 153.588 |
| Newkirk, 1 mile east of, on south end of culvert, on west end of stone; chiseled square marked "U. S. 1147"----- | 1, 147.29 |
| T. 28 N., Ra. 2 and 3 E., corner of secs. 19, 24, 25, and 30, 50 feet west of crossroads, on south end of culvert, on west end of wall; chiseled square marked "U. S. 1144"----- | 1, 143.78 |
| T. 28 N., R. 3 E., corner of secs. 19, 20, 29, and 30, in northwest corner of crossroads, on northeast corner of stone under south doorstep of schoolhouse; chiseled square marked "U. S. 1169"----- | 1, 169.17 |

From Newkirk east along Atchison, Topeka & Santa Fe Ry. to point 3 miles southeast of Newkirk.

| | |
|---|------------|
| Newkirk, 0.2 mile east of, in base of semaphore; southwest bolt----- | 1, 147.56 |
| Newkirk, 0.9 mile southeast of; top of stone milepost 2----- | 1, 157.84 |
| Newkirk, 1.9 miles southeast of; top of stone milepost 3----- | 1, 119.02 |
| Newkirk, 3.1 miles southeast of, secs. 5 and 6, T. 27 N., R. 3 E., in northeast corner of road crossing, near stone fence corner; iron post stamped "1100"----- | 1, 099.712 |

WASHUNGA QUADRANGLE.

[Latitude 36° 30'-37°; longitude 96° 30'-97°.]

From point 2.3 miles east of Newkirk east along highways to point 4.3 miles southeast of Foraker. (Leveled twice.)

| | |
|---|-----------|
| T. 28 N., R. 3 E., corner of secs. 20, 21, 23, and 26, 300 feet northeast of crossroads, near southwest of road; iron post stamped "1124" (the 4 months of the year)----- | 1, 123.65 |
|---|-----------|

| | Feet. |
|--|-------------|
| Mound Valley School, in southeast corner of crossroads, on northwest corner of cement flags at north door; chiseled square marked "U. S. \square "----- | 1, 103. 34 |
| T. 28 N., R. 3 E., quarter corner between secs. 22 and 27, 0.1 mile west of, on stone base of pump, south of road, in northwest corner; chiseled square marked "U. S. \square 1039"----- | 1, 039. 19 |
| T. 28 N., R. 3 E., corner of secs. 22, 23, 26, and 27, north side of road, 100 feet northwest of T road at corner, on southwest end of culvert; cut----- | 1, 051. 11 |
| T. 28 N., R. 3 E., 0.1 mile east of corner of secs. 23 and 26, on west end of south side wall of stone bridge; chiseled square marked "U. S. \square 1013"----- | 1, 012. 90 |
| T. 28 N., R. 3 E., secs. 23 and 26, Arkansas River crossing section line, on pier of steel bridge, north side, east end; top of rivet, marked "U. S. B. M. 1019"----- | 1, 019. 14 |
| T. 28 N., R. 3 E., 0.3 mile east of east edge of secs. 24 and 25, on top of prominent ridge, north of road, near fence; iron post stamped "1190"----- | 1, 189. 965 |
| Secs. 19, 30, 25, and 24, T. 28 N., Rs. 3 and 4 E., on top of corner stone; chiseled square marked "U. S. \square 1159"----- | 1, 159. 46 |
| T. 28 N., R. 4 E., corner of secs. 20, 29, 30, and 19, on top of corner stone; chiseled square marked "U. S. \square 1121"----- | 1, 121. 37 |
| T. 28 N., R. 4 E., quarter corner between secs. 20 and 29, on small stone bridge, west end, south wall; chiseled square marked "U. S. B. M. \square 1084"----- | 1, 083. 70 |
| T. 28 N., R. 4 E., corner of secs. 20, 21, 28, and 29, on top of corner stone; chiseled square----- | 1, 139. 33 |
| T. 28 N., R. 4 E., corner of secs. 22, 27, 28, and 21, in fence post northeast of crossroads; copper nail marked "U. S. 1135"----- | 1, 135. 45 |
| T. 28 N., R. 4 E., quarter corner between secs. 22 and 27; top of stone marked "1/4"----- | 1, 142. 9 |
| T. 28 N., R. 4 E., northeast corner of sec. 27, 0.1 mile west of, south of road, near fence, on ridge; iron post stamped "1181" (top of post is beaten concave)----- | 1, 180. 726 |
| T. 28 N., R. 4 E., corner of secs. 23, 26, 27, and 22; top of stone----- | 1, 164. 2 |
| T. 28 N., R. 4 E., corner of sec. 26, 0.2 mile east of, in corner fence post; copper nail marked "U. S. 1203"----- | 1, 202. 82 |
| T. 28 N., R. 4 E., northwest corner of sec. 36, in corner fence post southwest of; copper nail marked "U. S. 1205"----- | 1, 205. 32 |
| T. 28 N., R. 4 E., 950 feet northwest of corner of sec. 36, 10 feet north of small rock monument, in flat rock; aluminum tablet stamped "1180" (stamped 11 feet too low)----- | 1, 190. 999 |
| T. 28 N., R. 4 E., corner of sec. 36; top of stone marked "C 36"----- | 1, 140. 0 |
| T. 28 N., R. 4 E., about 0.2 mile northwest of south quarter of sec. 31, 150 feet northeast of Kirtley ranch house on Little Beaver Creek, west brace of corner fence post; copper nail marked "U. S. 1033"----- | 1, 034. 37 |
| Tps. 27 and 28 N., R. 5 E., corner of secs. 5, 6, 31, and 32, 0.2 mile east of, 15 feet southeast of T fence north of road; square hole in flat rock marked "U. S. 1094"----- | 1, 095. 83 |
| T. 28 N., R. 4 E., 0.2 mile west of corner of sec. 33, on slight ridge near fence; iron post stamped "1086"----- | 1, 087. 911 |

| | Feet. |
|--|-------------|
| T. 28 N., R. 5 E., quarter corner between secs. 34 and 35, 0.2 mile southeast of, south of creek, 200 feet northeast of small house, in top of post 5 feet north of T fence west; copper nail marked "U. S. 1042"----- | 1, 043. 39 |
| T. 28 N., R. 5 E., 0.25 mile south of corner common to secs. 35 and 36, north edge of section, on black walnut fence post, T fence west; paint mark marked "U. S. 1112"----- | 1, 113. 75 |
| T. 28 N., R. 5 E., corner of secs. 25, 26, 35, and 36; U. S. Land Office post, stamped with figures inverted if referred to lettering of post----- | 1, 084. 5 |
| T. 28 N., R. 5 E., 0.4 mile west of township line, secs. 25 and 36, on small ridge, on fence line south of road; iron post stamped "1143"----- | 1, 144. 434 |
| T. 28 N., Rs. 5 and 6 E., corner of secs. 30, 31, 36, and 26; U. S. Land Office post stamped "1141"----- | 1, 142. 01 |
| T. 28 N., R. 6 E., quarter corner between secs. 30 and 31; U. S. Land Office post stamped "1149"----- | 1, 150. 48 |
| T. 28 N., R. 6 E., corner of secs. 29, 30, 31, and 32; U. S. Land Office post stamped "1180"----- | 1, 181. 77 |
| T. 28 N., R. 6 E., quarter corner between secs. 29 and 30; U. S. Land Office post (top of post bent) stamped "1159"----- | 1, 160. 10 |
| T. 28 N., R. 6 E., corner of secs. 28, 29, 32, and 33, 20 feet southeast of U. S. Land Office post, southeast fence corner at crossroads; iron post stamped "1147"----- | 1, 147. 444 |
| T. 28 N., R. 6 E., line between secs. 28 and 33 crossing Salt Creek, in blazed elm tree on east bank, in branch on southwest side, 1.5 feet above ground; copper nail marked "U. S. 1114"----- | 1, 115. 15 |
| T. 28 N., R. 6 E., quarter corner between secs. 27 and 34; U. S. Land Office post stamped "1183"----- | 1, 184. 94 |
| T. 28 N., R. 6 E., corner of secs. 26, 27, 34, and 35; U. S. Land Office post stamped "1209"----- | 1, 210. 16 |
| T. 28 N., R. 6 E., 0.2 mile east of corner of secs. 26, 27, 34, and 35, at brink of hill; iron post stamped "1217"----- | 1, 218. 168 |
| T. 28 N., R. 6 E., corner of secs. 25, 36, 35, and 26; U. S. Land Office post stamped "1154"----- | 1, 155. 00 |
| T. 28 N., R. 6 E., line between secs. 25 and 36 crossing Elm Creek, on west bank; point on rock marked "U. S. 1142"----- | 1, 143. 4 |
| T. 28 N., Rs. 6 and 7 E., corner of secs. 30, 31, 25, and 36, corner fence post southeast of crossroads; copper nail marked "U. S. 1223"----- | 1, 224. 08 |
| Foraker, southwest corner of townsite, 0.5 mile west of station, center of road; cross on top of stone marked on fence post 15 feet north-west "U. S. 1247"----- | 1, 248. 78 |
| Foraker, building of Bank of Foraker, in southwest corner of pillar base at door; aluminum tablet stamped "1274"----- | 1, 274. 970 |
| Foraker, south edge of platform, 20 feet southwest of building; nail marked "U. S. 1270"----- | 1, 271. 26 |
| Foraker, 0.9 mile east of, on north guard rail at east end of trestle 2253; top of bolt marked "U. S. 1265"----- | 1, 266. 19 |
| Foraker, 2 miles east of, on trestle 2242, on south guard rail, 15 feet east of west end; top of bolt----- | 1, 238. 03 |
| Foraker, 3.2 miles east of, 450 feet east of milepost 223, on property fence, 50 feet south of road, in top of post; copper nail----- | 1, 215. 91 |

| | Feet. |
|---|-------------|
| Foraker, 8 miles east of, north of road, 150 feet east of milepost 223, 50 feet north of railroad at curve; iron post stamped "1218"----- | 1, 219. 809 |
| Foraker, 4.2 miles southeast of, 3.3 miles northwest of Blackland, 450 feet east of milepost 222, on fourth post east of telegraph pole; copper nail marked "U. S. 1185"----- | 1, 186. 36 |
| From point 3 miles southeast of Newkirk southeast and south along Atchison, Topeka & Santa Fe Ry. to Ralston. | |
| Newkirk, 4.1 miles southeast of, 1,600 feet north of road crossing south of milepost 5, at north end of cut, east of track; point on rock marked "U. S. 1125"----- | 1, 124. 74 |
| Newkirk, 4.9 miles southeast of, 2,800 feet southeast of crossroads, on top of stone milepost 6; point marked "U. S. 1135" (railroad bench mark)----- | 1, 134. 56 |
| Mervine siding, at crossing of east-west road in northeast corner near corner of fence; iron post stamped "1150"----- | 1, 149. 598 |
| Mervine siding, 1 mile southeast of stone milepost 8; point on marked "U. S. 1123" (railroad bench mark)----- | 1, 123. 32 |
| Mervine siding, 2 miles southeast of, 100 feet west of milepost 9, southeast corner of stone culvert 8 d; chiseled square marked "U. S. 1098" (railroad bench mark)----- | 1, 097. 58 |
| Mervine siding, 3 miles southeast of, 200 feet north of milepost 10, in northeast corner of farm-road crossing, near property fence; iron post stamped "1171" (stamping is evidently in error)----- | 1, 070. 454 |
| Mervine siding, 4 miles southeast of, 100 feet east of north-south road crossing; top of stone milepost 11, marked "U. S. 1048"----- | 1, 048. 11 |
| Uncas, in front of station; top of rail----- | 1, 032. 6 |
| Uncas, 0.3 mile east of, at milepost 12; top of rail driven in ground marked "U. S. 1025"----- | 1, 024. 66 |
| Uncas, 1.4 miles southeast of, 300 feet east of milepost 13, at north- south road crossing, 200 feet south of track; iron post stamped "993"----- | 992. 575 |
| Uncas, 2.3 miles southeast of, 800 feet north of north-south road cross- ing; top of stone post marked "U. S. 990"----- | 990. 07 |
| Uncas, 3.3 miles southeast of; top of stone milepost 15, marked "U. S. 983"----- | 983. 30 |
| Uncas, 4.5 miles southeast of, 700 feet east of milepost 16, at north- south road crossing, south of track, near east cattle-guard fence; iron post stamped "989"----- | 989. 286 |
| Kaw, 0.4 mile west of, 300 feet east of east-west road crossing; point on top of stone milepost 17 marked "U. S. 985"----- | 984. 42 |
| Kaw, in front of station; top of rail marked on west edge of brick platform "U. S. 985"----- | 984. 5 |
| Kaw, 0.7 mile east of, 170 feet east of milepost 18, on south end of west pier of Arkansas River railroad bridge; square marked "U. S. B. M. 991"----- | 990. 94 |
| Arkansas River, bridge 18 A, at south end, on east pier (railroad bench mark)----- | 995. 71 |
| Kaw, 1.7 miles east of, 800 feet west of Soldani stockyard switch, in cut on top of ridge, 550 feet northeast of milepost 19, near north property fence; iron post stamped "1035"----- | 1, 034. 427 |

| | Feet |
|--|-----------|
| Kaw, 2.8 miles east of, 1,100 feet east of north-south road crossing; point on top of stone milepost 20 marked "U. S. 1049"----- | 1,048.98 |
| Kaw, 3.8 miles east of; top of stone milepost 21, marked "1075"----- | 1,084.47 |
| Kaw, 5 miles southeast of, 1,100 feet southeast of stone milepost 22, in southeast corner of east-west road crossing, near corner fence; iron post stamped "1029"----- | 1,015.951 |
| Kaw, 5.1 miles southeast of, 2,200 feet west of north-south road crossing; point on top of stone milepost 23, marked "U. S. 1009"----- | 998.80 |
| Kaw, 6.7 miles southeast of; point on top of stone milepost 24, marked "U. S. 974" (railroad bench mark)----- | 964.25 |
| Burbank, 0.7 mile northwest of; point on top of stone milepost 25, marked "U. S. 946" (railroad bench mark)----- | 945.91 |
| Burbank, 150 feet southeast of station, in northeast corner of east-west road crossing, near corner of fence; iron post stamped "935"----- | 935.285 |
| Burbank, in front of station; top of rail----- | 937.4 |
| Milepost 26; point on top----- | 931.9 |
| Burbank, 1.7 miles southeast of; point on top of stone milepost 27, marked "U. S. 926"----- | 926.14 |
| Burbank, 2.7 miles southeast of, 1,300 feet south of east-west road crossing, 150 feet southwest of milepost 28, near west property fence; iron post stamped "914"----- | 914.149 |
| Burbank, 3.7 miles southeast of, 100 feet south of small stream; point on top of stone milepost 29, marked "U. S. 899" (railroad bench mark)----- | 899.01 |
| Remington, 0.3 mile north of station; point on top of stone milepost 30, marked "U. S. 888" (railroad bench mark)----- | 887.48 |
| Remington, in front of station; top of rail, marked "U. S. 886"----- | 885.5 |
| Remington, 0.7 mile southeast of, 200 feet east of milepost 31, near north property fence, 60 feet from rock marked "→ U. S. B. M.," blazed tree 60 feet south, in 3-foot rock; aluminum tablet stamped "881"----- | 881.068 |
| Remington, 1.7 miles southeast of, 400 feet south of east-west road; point on top of stone milepost 32, marked "U. S. 872"----- | 872.09 |
| Remington, 2.7 miles southeast of, 900 feet northwest of north-south road crossing; point on top of stone milepost 33, marked "U. S. 867" (railroad bench mark)----- | 866.54 |
| Remington, 3.7 miles south of, 100 feet northwest of milepost 34, near north property fence; iron post stamped "851"----- | 849.553 |
| Remington, 4.7 miles south of, 150 feet east of north-south road crossing; point on top of stone milepost 35, marked "U. S. 854"----- | 853.09 |
| Remington, 5.7 miles south of, 250 feet east of north-south farm-road crossing; point on top of stone milepost 36, marked "U. S. 853" (railroad bench mark)----- | 851.55 |
| Fairfax, 0.6 mile north of, 200 feet west of north-south road crossing, in cut; point on top of stone milepost 37, marked "U. S. 843"----- | 842.05 |
| Fairfax, in angle of brick platform, 15 feet southeast of station building; iron post stamped "843"----- | 841.300 |
| Top of stone milepost 38, marked "835 U. S."----- | 834.1 |
| Fairfax, 1.3 miles south of, in top of stone milepost 39; fossil shell marked "U. S. 814"----- | 814.02 |
| Fairfax, 2.3 miles south of, 600 feet north of east-west road crossing near trestle; point on top of stone milepost 40, marked "U. S. 807" (railroad bench mark)----- | 806.51 |

| | Feet. |
|--|----------|
| Fairfax , 2.6 miles south of, 800 feet south of east-west road crossing, 15 feet east of west property fence, 900 feet south of milepost 40; iron post stamped "819"----- | 818. 311 |
| Fairfax , 3.4 miles south of, 1,200 feet northeast of railroad bridge across Arkansas River; point on top of stone milepost 41, marked "U. S. 811" (railroad bench mark)----- | 810. 43 |
| Arkansas River , north end of railroad bridge over----- | 810. 9 |
| Arkansas River , surface of water under railroad bridge, June 8, 1912----- | 788 |
| Arkansas River , south end of railroad bridge over----- | 811 |
| Ralston , 1 mile north of, 1,000 feet north of east-west road crossing; point on top of stone milepost 42, marked "U. S. 807"----- | 806. 46 |
| Ralston , in front of station; top of rail----- | 810. 5 |
| Ralston , 150 feet southwest of Atchison, Topeka & Santa Fe Ry. station, at west property fence; iron post stamped "805"----- | 804. 905 |

Agra, Chandler, Mallon, Maud, Prague, Sac and Fox, and Shawnee Quadrangles.

LINCOLN, PAYNE, AND POTTAWATOMIE COUNTIES.

The elevations in the following list were determined by primary leveling, a prism level and yard rods being employed.

The leveling was done in 1905 by E. T. King; additional leveling in the Shawnee quadrangle, along the Choctaw, Oklahoma & Gulf R. R., was done in 1897 by E. L. Faison.

AGRA QUADRANGLE.

[Latitude 35° 45'-36°; longitude 96° 45'-97°.]

From Perkins northeast along Atchison, Topeka & Santa Fe Ry. to Ripley.

| | Feet. |
|---|----------|
| Perkins , 3.0 miles east of, north-south road crossing, in northwest fence corner, 200 feet northeast of milepost 33; iron post stamped "832 Adj 1903"----- | 830. 663 |
| Payne County , 125 feet east of township line between Rs. 3 and 4 E., T. 17 N., 10 feet south of track, in rock cliff; aluminum tablet stamped "827 Adj 1903"----- | 825.813 |

From Cushing southwest along Missouri, Kansas & Texas Ry. to Carney.

| | |
|---|-------------|
| Cushing , 0.25 mile west of Santa Fe station on Missouri, Kansas and Texas Ry., 2,000 feet southwest of railroad crossing; at west end of cut, at private-road crossing, 50 feet north of track; iron post stamped "966 Adj 1903" (elevation 962.169 by railroad)----- | 965. 046 |
| Cushing , 3.5 miles southwest of, in Lincoln County, at county line, 100 feet south of corner of secs. 17, 18, 19, and 20, in south fence corner in right-of-way; iron post stamped "1036 Adj 1903"----- | 1, 034. 431 |
| Agra , 4.0 miles northeast of, north-south road crossing, in southwest corner of fence; iron post stamped "1049 Adj 1903"----- | 1, 047. 506 |
| Agra , 0.5 mile east of, north-south road crossing, in southwest fence corner, 400 feet east of milepost 290; iron post stamped "1034 Adj 1903"----- | 1, 032. 635 |
| Agra , in front of station; top of rail----- | 1, 035. 5 |
| Agra , 2.5 miles southwest of, east-west road crossing, in north fence corner in railroad right-of-way; iron post stamped "1036 Adj 1903"----- | 1, 034. 442 |

| | |
|---|------------------|
| Sparks, 3.0 miles east of, east-west road crossing, 0.25 mile west of corner of secs. 9, 10, 15, and 16, 10 feet north of track, in rock ledge; aluminum tablet stamped "838 Adj 1903"----- | Feet. 836.502 |
|---|------------------|

From Sparks 3.5 miles northeast along road.

| | |
|--|---------|
| T. 18 N., R. 5 E., corner of secs. 3, 4, 9, and 10, near northwest corner of right of way, 200 yards east of Deep Fork, in sunken boulder; aluminum tablet stamped "785 Adj 1903"----- | 783.556 |
|--|---------|

From Meeker west along highway 3 miles, thence north 6 miles, thence east 3 miles, thence north to Midlothian.

| | |
|--|---------|
| T. 12 N., R. 3 E., corner of secs. 15, 16, 21, and 22, at northwest fence corner post; iron post stamped "928 Adj 1903"----- | 919.686 |
|--|---------|

| | |
|---|---------|
| Tps. 12 and 13 N., R. 3 E., secs. 3 and 4 of the former and 33 of the latter, 10 feet east of southeast fence corner; iron post stamped "898 Adj 1903"----- | 896.604 |
|---|---------|

| | |
|--|---------|
| T. 13 N., R. 3 E., corner of secs. 15, 16, 21, and 22, near southeast fence corner in public right of way; iron post stamped "979 Adj 1903"----- | 977.336 |
|--|---------|

| | |
|---|---------|
| T. 13 N., Rs. 3 and 4 E., corner of secs. 13, 14, 18, and 19, near southeast fence corner in public right of way; iron post stamped "929 Adj 1903"----- | 927.677 |
|---|---------|

| | |
|---|---------|
| T. 13 N., R. 4 E., quarter corner between secs. 16 and 17, east side of public right of way, in sunken boulder, 1 foot from fence line; aluminum tablet stamped "961 Adj 1903"----- | 959.103 |
|---|---------|

MALLOM QUADRANGLE

[Latitude 35° 45'-36°; longitude 96° 30'-96° 45'.]

From milepost 95 north along Eastern Oklahoma branch of the Atchison, Topeka & Santa Fe Ry. to Cushing.

| | |
|--|---------|
| Milepost 91, in top of, 17 feet west of track; aluminum tablet stamped "948 Adj 1903"----- | 946.590 |
|--|---------|

| | |
|---|---------|
| Cushing, 4.0 miles south of, in top of milepost 87; aluminum tablet stamped "857 Adj 1903"----- | 855.023 |
|---|---------|

From Stroud north along road and west to Cushing.

| | |
|---|---------|
| Stroud, 3.0 miles north of, T. 15 N., R. 6 E., corner of secs. 3, 4, 9, and 10, near northwest fence corner in public right of way; iron post stamped "908 Adj 1903"----- | 906.067 |
|---|---------|

| | |
|---|---------|
| Stroud, 6.0 miles north of, T. 16 N., R. 6 E., at corner of secs. 21, 22, 27, and 28, Ponca township, in buried boulder 2 feet from southwest corner; aluminum tablet stamped "926 Adj 1903"----- | 924.527 |
|---|---------|

| | |
|--|---------|
| T. 16 N., R. 6 E., corner of secs. 3, 4, 9, and 10, 2 feet from northwest fence corner, in buried boulder; aluminum tablet stamped "997 Adj 1903"----- | 994.860 |
|--|---------|

| | |
|---|---------|
| T. 17 N., R. 6 E., 700 yards north of corner of secs. 27, 28, 33, and 34, 12.5 feet east of west fence line, at large rock basin in public right of way, in rock ledge; aluminum tablet stamped "871 Adj 1903"----- | 869.571 |
|---|---------|

| | |
|---|---------|
| Cushing, 0.5 mile south of, 6.0 miles east of, corner of secs. 3, 4, 9, and 10, 2 feet from southeast fence corner, in boulder; aluminum tablet stamped "894 Adj 1903"----- | 892.078 |
|---|---------|

| | |
|---|---------|
| Cushing, 0.5 mile south and 3.0 miles east of, corner of secs. 6, 7, 1, and 12, 500 feet east of corner and township line, 7 feet north of south fence line, in rock; aluminum tablet stamped "874 Adj 1903"----- | 871.904 |
|---|---------|

MAUD QUADRANGLE.

[Latitude 35°-35° 15'; longitude 96° 45'-97°.]

From Tecumseh southwest along Eastern Oklahoma branch of the Atchison, Topeka & Santa Fe Ry. to McComb.

| | Feet. |
|--|---------|
| T. 9 N., R. 3 E., sec. 27, in stone milepost 140; aluminum tablet stamped "987 Adj 1903"----- | 985.222 |
| T. 8 N., R. 3 E., sec. 11, in stone milepost 143; aluminum tablet stamped "931 Adj 1903"----- | 929.289 |
| McComb, 1.0 mile northeast of station, T. 8 N., R. 3 E., sec. 21, in stone milepost 146; aluminum tablet stamped "931 Adj 1903"----- | 928.968 |

From Avoca north along road to point near Sewell, thence north to point 2 miles east of Tecumseh.

| | |
|--|-----------|
| Tps. 6 and 7 N., Rs. 3 and 4 E., corner of, 20 feet east of northeast fence corner; iron post stamped "1070 Adj 1903"----- | 1,068.051 |
| T. 7 N., Rs. 3 and 4 E., corner of secs. 13, 24, 18, and 19, near northwest corner fence post; iron post stamped "896 Adj 1903"----- | 894.915 |
| Romulus, in front of station; top of rail----- | 915. |
| Tps. 7 and 8 N., Rs. 3 and 4 E., corner of, near northwest fence corner; iron post stamped "1015 Adj 1903"----- | 1,013.583 |
| T. 8 N., Rs. 3 and 4 E., 175 feet north of corner of secs. 13, 24, 18, and 19, in west fence line; iron post stamped "998 Adj 1903"----- | 996.136 |
| Tps. 8 and 9 N., Rs. 3 and 4 E., corner of, near southeast fence corner; iron post stamped "1030 Adj 1903"----- | 1,028.776 |
| T. 9 N., R. 4 E., corner of secs. 28, 29, 32, and 33, near northwest fence corner; iron post stamped "1027 Adj 1903"----- | 1,025.822 |

PRAGUE QUADRANGLE.

[Latitude 35° 15'-35° 30'; longitude 96° 30'-96° 45'.]

Near Prague.

| | |
|---|---------|
| Prague, 1.0 mile south of, on Lincoln-Pottawatomie county line, 10 feet south of southwest fence corner post, in sunken boulder; aluminum tablet stamped "961 Adj 1903"----- | 959.009 |
| Prague, 2.0 miles south by 2.0 miles west of, T. 11 N., Rs. 5 and 6 E., corner of secs. 1, 6, 7, and 12, 12 feet west of southwest fence corner, in sunken boulder; aluminum tablet stamped "985 Adj 1903"----- | 983.190 |
| T. 11 N., R. 5 E., secs. 10, 11, 14, and 15, near southwest fence corner post in east-west fence line, in sunken boulder; aluminum tablet stamped "975 Adj 1903"----- | 973.143 |
| T. 12 N., Rs. 3 and 4 E., corner of secs. 13, 24, 18, and 19, 50 feet east of corner at south fence line; iron post stamped "977 Adj 1903"----- | 975.866 |

SAC AND FOX 15' QUADRANGLE.

[Latitude 35° 30'-35° 45'; longitude 96° 30'-96° 45'.]

From Prague north along road to Stroud, thence west to Davenport.

| | |
|---|---------|
| Prague, 3.5 miles north of, 55 feet northwest of corner of secs. 4, 5, 8, and 9, near northwest fence corner; iron post stamped "949 Adj 1903"----- | 947.390 |
| Arlington, 250 feet east and 24 feet south of corner of secs. 20, 21, 28, and 29, 16 feet north of south fence line, in public right of way, in rock; aluminum tablet stamped "912 Adj 1903"----- | 910.624 |

From Earlsboro northwest along Choctaw, Oklahoma & Gulf R. R. to milepost 452, 4 miles west of Shawnee.

| | Feet. |
|---|-----------|
| Earlsboro, 200 feet north of station building, 17 feet west of main track; iron post----- | 1,026.088 |
| Shawnee, 15 feet north of track, at east end of station platform; iron post----- | 1,041.988 |
| T. 10 N., R. 3 E., sec. 10, 4 miles west of Shawnee, near Dale; 1,850 feet east of road crossing, 360 feet east of milepost 452, 32 feet south of track; iron post stamped "1018 Okla"----- | 1,019.450 |

Guthrie 15', Kingfisher 30', and Perkins 15' quadrangles.

CANADIAN, KINGFISHER, LINCOLN, LOGAN, AND OKLAHOMA COUNTIES.

The elevations in the following list were determined by primary leveling, prism level and yard rods being employed.

The leveling in 1905 was done by E. T. King and that in 1906 by J. W. King; some work in Perkins and Guthrie quadrangles was done in 1897 by Robert Coe.

GUTHRIE QUADRANGLE.

[Latitude 35° 45'-36°; longitude 97° 15'-97° 30'.]

From Guthrie west along St. Louis, El Reno & Western Ry. to Dutcher station.

| | Feet. |
|---|-----------|
| Guthrie, at south side of west entrance to new Federal building, in granite stone; aluminum tablet stamped "980 Adj 1903"----- | 979.508 |
| Guthrie, in front of Guthrie National Bank, in rock at foot of iron column; aluminum tablet stamped "982 Okla"----- | 983.050 |
| Guthrie, "Star Bazaar," in rock at side of west entrance; aluminum tablet stamped "984 Okla"----- | 984.408 |
| Guthrie, 3.8 miles west of, at road crossing on line between secs. 13 and 24, T. 16 N., R. 3 W., on south side of road, west side of track, in corner of right-of-way fence; iron post stamped "1088 Adj 1903"----- | 1,087.077 |

From Guthrie southwest along Atchison, Topeka & Santa Fe Ry. to Seward.

| | |
|---|---------|
| Guthrie, city hall, on rock on west side of south entrance; chiseled cross (Guthrie datum 974.207)----- | 973.239 |
| Guthrie, 2.8 miles south of, at road crossing on line between secs. 20 and 29, T. 16 N., R. 2 W.; iron post stamped "944 Adj 1903"----- | 942.908 |
| Seward, east of track, south of road near crossing; iron post stamped "979 Adj 1903"----- | 978.072 |

From Guthrie northeast along Atchison, Topeka & Santa Fe Ry. to Coyle.

| | |
|---|---------|
| Guthrie, 3.0 miles northeast of, at north-south road crossing, in southeast fence corner; iron post stamped "913 Adj 1903"----- | 911.549 |
| Guthrie, 6.0 miles northeast of, at east-west road crossing on section line, in northwest fence corner; iron post stamped "942 Adj 1903"----- | 941.249 |
| Russell station, 2.0 miles east of, on township line close to milepost 10, near trestle, east of drain, near fence; iron post stamped "899 Adj 1903"----- | 899.000 |
| Pleasant Valley, 1.0 mile west of, at north-south road crossing, in southwest fence corner; iron post stamped "900 Adj 1903"----- | 900.000 |

| | Feet. |
|--|-----------|
| Coyle, 3.0 miles northwest of, near north-south road crossing near trestle 23, on roadbed of railroad, 8 feet south of track; iron post stamped "879 Adj 1903"----- | 877.944 |
| Coyle, 1.0 mile northwest of, at north-south road crossing, in southwest fence corner; iron post stamped "879 Adj 1903"----- | 877.734 |
| From Guthrie east along Chicago, Rock Island & Pacific Ry. to Indian meridian. | |
| Guthrie, 2.0 miles east of, at crossing of St. Louis & San Francisco R. R. with Fort Smith & Western R. R., in northwest right-of-way fence corner; iron post stamped "1089 Adj 1903"----- | 1,088.149 |
| Taylor, north-south road crossing, in northeast fence corner, in railroad right of way; iron post stamped "1176 Adj 1903"----- | 1,174.817 |
| Guthrie, 6.0 miles east of, north-south road crossing, in southwest fence corner; iron post stamped "1165 Adj 1903"----- | 1,164.086 |
| Indian meridian, 1.0 mile west of, north-south road crossing in northwest fence corner; iron post stamped "1161 Adj 1903"----- | 1,160.155 |

From Guthrie east along road to T. 17 N., R. 1 E., sec. 22.

| | |
|---|-----------|
| T. 16 N., R. 1 W., near quarter corner south side of sec. 5, in rock; tablet stamped "1198 Okla"----- | 1,198.893 |
| T. 16 N., R. 1 W., about 500 feet west of southeast corner of sec. 1, in rock; aluminum tablet stamped "1093 Okla"----- | 1,094.326 |

KINGFISHER QUADRANGLE.

[Latitude 35° 30'–36°; longitude 97° 30'–98°.]

From Kingfisher east along Chicago, Rock Island & Pacific Ry. to Reeding.

| | |
|--|-----------|
| Kingfisher, on south corner of iron shoe plate upon concrete, on which rests south iron column supporting standpipe to city water plant; square bounded by two edges of plate and two chisel marks (C. and G. S. b. m. F)----- | 1,057.370 |
| Kingfisher, 3.5 miles southeast of, close to parallel 35° 50' N. and north-south township line, in northwest corner of public-road crossing; iron post stamped "1155 Adj 1903"----- | 1,154.645 |
| Kingfisher, 5.5 miles southeast of, south of railroad, 75 feet west of crossing, in fence corner in railroad right of way, 200 yards west of corner of secs. 4, 5, 32, and 33; iron post stamped "1162 Adj 1903"----- | 1,161.815 |
| Reeding, 1.5 miles west of, 60 feet south of track, east of north-south road crossing, in fence corner in railroad right of way; iron post stamped "1153 Adj 1903"----- | 1,152.224 |
| Reeding, in front of station; top of rail----- | 1,108 |
| Reeding, 1.5 miles east of, at fence corner, northwest corner of road crossing between secs. 8 and 9; iron post stamped "1112 Adj 1903"----- | 1,111.167 |

From point 4.0 miles southwest of Navina southwest along St. Louis, El Reno & Western Ry. to Piedmont.



| | |
|--|-----------|
| Lockridge, 1.0 mile northwest of, east-west road crossing, in southwest corner; iron post stamped "1114 Adj 1903"----- | 1,113.212 |
| Lockridge, in front of station; top of rail----- | 1,138 |
| Lockridge, 1.0 mile south of, at north-south road crossing, in northwest corner, in Oklahoma County, on Oklahoma-Canadian railroad; iron post stamped "1162 Adj 1903"----- | 1,161.420 |

| | Feet |
|--|---------|
| Goodnight, 0.25 mile northeast of station, line between Logan and Payne counties (secs. 13 and 18, respectively), near northwest fence corner; iron post stamped "851 Adj 1903"----- | 850.227 |
| Perkins, 3.0 miles west of station, north-south road crossing, near northwest fence corner; iron post stamped "847 Adj 1903"----- | 846.308 |
| Perkins, 250 feet east of station, north-south road crossing, near Southwest fence corner, on right of way, 12 feet south of track; iron post stamped "836 Adj 1903"----- | 835.319 |

From Indian meridian southeast along Chicago, Rock Island & Pacific Ry. to Lowe.

| | |
|--|-----------|
| Iconium, 1.0 mile west of north-south road crossing, 100 yards north of corner of secs. 8, 9, 17, and 18, in northwest fence corner; iron post stamped "1132 Adj 1903"----- | 1,130.941 |
| Iconium, 1 mile east of, east-west road crossing, south fence corner, 400 feet east of milepost 516; iron post stamped "1097 Adj 1903"--- | 1,095.920 |
| Merrick, in front of station; top of rail----- | 1,074 |
| Merrick, 0.8 mile east of, 600 feet east of milepost 513, 100 yards east of road crossing, 85 feet north of track, near fence corner; iron post stamped "1082 Adj 1903"----- | 1,080.362 |
| Dudley, 1.5 miles northwest of, north-south road crossing, in southwest fence corner; iron post stamped "1083 Adj 1903"----- | 1,081.192 |
| Carney, 1.5 miles southwest of, crossing of St. Louis & San Francisco and Missouri, Kansas & Texas railroads, 150 feet east of former, 50 feet north of latter, 2 feet from fence corner bounding right of way; iron post stamped "1040 Adj 1903"----- | 1,038.168 |
| Carney, 4.0 miles southeast of, at north-south road crossing, in southwest fence corner, on railroad right of way; iron post stamped "979 Adj 1903"----- | 977.589 |

From Carney southwest along Missouri, Kansas & Texas Ry. to Fallis.

| | |
|---|--|
| Carney, 0.3 mile west of station, north-south road crossing, in southeast fence corner, 100 yards southeast of corner of secs. 31, 32, 5, and 6; iron post stamped "1059 Adj 1903"----- | 1,057.  |
| Carney, 6.0 miles southwest of, north-south road crossing, west of section line, south of track; iron post stamped "958 Adj 1903"----- | 956.8  |

Edmond, Luther, McComb, McLoud, Moore, and Norman 15' quadrangles.

CANADIAN, CLEVELAND, LINCOLN, LOGAN, McCLAIN, OKLAHOMA, AND POTTAWATOMIE COUNTIES.

The elevations in the following list were determined by primary leveling.

The leveling was done in Luther quadrangle in 1899 by Robert Coe and in 1906 by J. W. King; in Edmond quadrangle in 1896 and 1907 by J. W. King and F. M. Hutchinson, respectively; in McLoud quadrangle in 1897-99 by Coe, in 1906 by J. W. King, and in 1907 by Hutchinson; in Moore quadrangle in 1897 and 1907 by Coe and Hutchinson, respectively; in McComb quadrangle in 1898 by Coe,

in 1905 by E. T. King, and in 1907 by Hutchinson; in Norman quadrangle in 1897 and 1898 by Coe and in 1907 by Hutchinson.

EDMOND QUADRANGLE.

[Latitude 35° 30'–35° 45'; longitude 97° 15'–97° 30']

From Choctaw north 3.5 miles.

Feet.

| | |
|--|------------|
| Choctaw, 2.5 miles north of, 30 feet south of fence post at northeast corner of sec. 11, T. 12 N., R. 1 W., on right of way, close to fence, in stone; bronze triangulation tablet stamped "1194 No. 11" | 1, 192.925 |
| Choctaw, 3.5 miles north by 0.8 mile east of, at east end of bridge over north fork of Canadian River, close to fence on north side of road; triangulation tablet stamped "Prim. Trav. Sta. No. 8, 1907; No. 12, 1096" | 1, 094.969 |
| From T. 13 N., R. 3 W., sec. 11 northeast and northerly to center of T. 15 N. | |
| T. 13 N., R. 3 W., 50 feet northwest of crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 2 and 11; iron post stamped "1178 Okla. No. 50" | 1, 177.556 |
| Edmond, T. 14 N., R. 3 W., 80 feet east and 30 feet north of street crossing of Atchison, Topeka & Santa Fe Ry., 350 feet north of station; iron post stamped "1200 Okla. No. 51" | 1, 190.263 |
| T. 14 N., R. 3 W., 80 feet east and 30 feet north of crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 11 and 14; iron post stamped "11193 Okla. No. 52" | 1, 192.296 |
| Waterloo, T. 15 N., R. 3 W., 80 feet east and 30 feet north of crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 3 and 34; iron post stamped "1133 Okla. No. 53" | 1, 132.367 |

Along line between ranges 1 and 2 west.

(Posts set but elevations not determined.)

| | |
|--|--|
| T. 15 N., R. 1 W., 55 feet northeast of southwest corner of sec. 30; iron post stamped "No. 63." | |
| T. 14 N., R. 1 W., 45 feet southeast of northwest corner of sec. 7; iron post stamped "No. 64." | |
| T. 14 N., R. 2 W., 50 feet northwest of southeast corner of sec. 13; iron post stamped "No. 65." | |
| T. 14 N., R. 1 W., 75 feet southeast of crossing of Missouri, Kansas & Texas Ry. and line between secs. 31 and 36; iron post stamped "No. 66." | |
| T. 13 N., R. 2 W., 65 feet southwest of northeast corner of sec. 13; iron post stamped "No. 67." | |
| T. 13 N., R. 1 W., 50 feet northeast of southwest corner of sec. 19; iron post stamped "No. 68." | |
| T. 13 N., R. 2 W., 60 feet northwest of southeast corner of sec. 36; iron post stamped "No. 69." | |
| T. 12 N., R. 2 W., 75 feet southwest of crossing of Frisco railroad and line between secs. 1 and 6; iron post stamped "No. 70." | |
| T. 12 N., R. 2 W., 50 feet southwest of northeast corner of sec. 24; iron post stamped "No. 71." | |

LUTHER QUADRANGLE

[Latitude 35° 30'-35° 45'; longitude 97°-97° 15'.]

From Hurrah north along section line to point 5 miles north of Luther.

| | Feet. |
|--|-----------|
| T. 12 N., R. 1 E., southeast corner of sec. 11; iron post stamped "Oklahoma 1094"----- | 1,095.510 |
| T. 13 N., R. 1 E., near southeast corner of sec. 26; iron post stamped "1930 Okla"----- | 1,080.544 |
| T. 13 N., R. 1 E., near southeast corner of sec. 10, in rock; aluminum tablet stamped "1024 Okla"----- | 1,024.834 |
| T. 14 N., R. 1 E., southeast corner of sec. 27; iron post stamped "900 Okla"----- | 900.619 |
| T. 14 N., R. 1 E., southeast corner of sec. 9; iron post stamped "956 Okla"----- | 957.039 |

From Fallis southeast along Fort Smith & Western R. R. to Warwick.

| | |
|---|---------|
| Fallis, 0.5 mile south of Missouri, Kansas & Texas Ry. station, east-west road crossing, 600 feet north of milepost 311, at switch block west of track and north of wagon road; iron post stamped "880 Adj 1903"----- | 878.757 |
| Fallis, 2.5 miles southeast of, east-west road crossing, between secs. 5 and 8, near milepost 192, 10 feet north of track, 1 foot from crossing post; iron post stamped "866 Adj 1903"----- | 863.985 |
| Wellston, 0.5 mile northwest of, north-south road crossing, 2,000 feet east of milepost 190, between secs. 10 and 11, 10 feet north of track, in public right of way; iron post stamped "865 Adj 1903"----- | 853.699 |
| Wellston-McKinley township line, between sec. 12 (Wellston) and sec. 7 (McKinley), 15 feet north of track near half-mile post; iron post stamped "847 Adj 1903"----- | 845.391 |

From Wellston south to point 6 miles north of McLeod.

| | |
|---|----------|
| Wellston, 0.5 mile south of, at corner of secs. 14, 15, 22, and 23, T. 14 N., R. 2 E., on stone; marked "U. S. B. M. 887"----- | 886.97 |
| Wellston, 1.5 miles south of, about 40 feet northwest of corner of secs. 22, 23, 26, and 27, T. 14 N., R. 2 E., in right of way, near fence on east side of sec. 22; iron post stamped "No. 1-951"----- | 950.748 |
| Wellston, 2.5 miles south of, 55 feet north of corner of secs. 26, 27, 34, and 35, in right of way, on top of stone; cross marked "U. S. B. M. 1012"----- | 1,011.98 |
| Wellston, 3.5 miles south of, 35 feet northwest of stone at corner between secs. 34 and 35, on south line of T. 14 N., R. 2 E., near fence corner, in right of way; triangulation tablet stamped "987 No. 2"----- | 987.010 |
| Wellston, 5.25 miles south of, on top of hill, west of road, in base of tree trunk, on west side; nail marked "U. S. B. M. 992"----- | 991.51 |
| Wellston, 5.5 miles south of, about 45 feet south of corner of secs. 10, 11, 14, and 15, T. 13 N., R. 2 E., on east side of road, in base of tree trunk; nail marked "U. S. B. M. 948"----- | 947.88 |
| T. 13 N., R. 2 E., about 45 feet northwest of corner of secs. 14, 15, 22, and 23, in right of way, 12 feet north of post at southeast corner of sec. 15; iron post stamped "941 No. 3"----- | 940.265 |

| | Feet. |
|--|-------------|
| T. 13 N., R. 2 E., about 45 feet northwest of corner of secs. 26, 27, 34, and 35, in east-west right of way, in base of tree trunk; nail marked "U. S. B. M. 1055"----- | 1, 055. 08 |
| T. 13 N., R. 2 E., on east side of sec. 34, 9.5 miles south of Wellston, about 50 feet north of township line, in right of way near fence; iron post stamped "1071 No. 4"----- | 1, 071. 089 |
| T. 12 N., R. 2 E., at corner of secs. 9, 10, 15, and 16, in base of large tree at northeast corner of sec. 9; nail marked "U. S. B. M. 1091"----- | 1, 090. 43 |
| T. 12 N., R. 2 E., west of sec. 9, in right of way near fence, about 80 feet from corner; tablet stamped "1060 No. 5"----- | 1, 059. 913 |

From point 3.5 miles north by 1.0 mile east of Choctaw north along Indian meridian and east along section line to point 5.0 miles north of Luther.

| | |
|--|-------------|
| T. 13 N., R. 1 E., near northwest corner of sec. 31, in meridian right of way, in base of large tree; nail marked "U. S. B. M. 1139"----- | 1, 138. 07 |
| T. 13 N., R. 1 E., at southwest corner of sec. 19, in meridian right of way, about 50 feet north of fence post, in stone; tablet stamped "1216 No. 13"----- | 1, 214. 682 |
| Luther, 4.0 miles south by 3.0 miles west of, 1,115 feet south of saw-mill on Indian meridian, on west side of wagon track, in base of large tree; nail marked "U. S. B. M. 1043"----- | 1, 042. 15 |
| T. 13 N., R. 1 W., about 100 feet northeast of fence post at southeast corner of sec. 12, on Indian meridian, on east side of wagon track, in top of stone; cut cross marked "U. S. B. M. 1031"----- | 1, 030. 26 |
| T. 13 N., R. 1 E., northwest corner of sec. 7, about 30 feet south of corner fence post, in meridian right of way, close to fence line, in stone; tablet stamped "1058 No. 14"----- | 1, 067. 118 |
| Luther, 3.0 miles west of, on meridian 370 feet south of Missouri, Kansas & Texas Ry. crossing, 700 feet north of bridge over Deep Fork, in right of way close to east fence; iron post stamped "935 No. 15"----- | 934. 218 |
| Luther, 2.0 miles north by 3.0 miles west of, in meridian right of way, about 30 feet northwest of fence post on northwest corner of sec. 18, in T. 14 N., R. 1 W., in rock in place; tablet stamped "967 No. 16"----- | 965. 635 |
| Luther, 5.0 miles north by 3.0 miles west of, on meridian right of way, about 30 feet south of fence post at northeast corner of sec. 36, T. 15 N., R. 1 W., in stone; tablet stamped "1080 No. 17"----- | 1, 078. 569 |
| Luther, 5.0 miles north by 1.0 mile west of, at corner of secs. 28, 29, 32, and 33, T. 15 N., R. 1 E., in top of corner stone; cross marked "U. S. B. M. 926"----- | 924. 95 |
| Luther, 5.0 miles north of, at corner of secs. 27, 23, 33, and 34, T. 15 N., R. 1 E.; iron post stamped "914"----- | 915. 381 |

McCOMB QUADRANGLE.

[Latitude 35°-35° 15'; longitude 97°-97° 15'.]

From T. 6 N., R. 1 W., southeast corner of sec. 1, east 6 miles, thence north along range line with 1 mile spur lines east and west to certain section corners.

| | |
|--|-------------|
| T. 6 N., R. 1 E., southeast corner of sec. 5; iron post stamped "1126 Okla"----- | 1, 128. 163 |
| T. 6 N., R. 1 E., southeast corner of sec. 2; iron post stamped "1084 Okla"----- | 1, 084. 366 |

| | Feet. |
|--|-----------|
| T. 7 N., R. 2 E., southeast corner of sec. 30; iron post stamped "1069 Okla"----- | 1,100.523 |
| T. 7 N., R. 1 E., near southeast corner of sec. 26; iron post stamped "1065 Okla"----- | 1,037.086 |
| T. 7 N., R. 2 E., near southeast corner of sec. 7; iron post stamped "1097 Okla"----- | 1,098.454 |
| T. 7 N., R. 1 E., near southeast corner of sec. 11; iron post stamped "1126 Okla"----- | 1,127.407 |
| T. 8 N., R. 2 E., southeast corner of sec. 30; iron post stamped "1093 Okla"----- | 1,095.238 |
| T. 5 N., R. 1 E., southeast corner of sec. 26; iron post stamped "1050 Okla"----- | 1,052.126 |
| T. 8 N., R. 2 E., southeast corner of sec. 7, near Pleasant Valley schoolhouse; iron post stamped "992 Okla"----- | 993.322 |
| T. 8 N., R. 1 E., near southeast corner of sec. 11; iron post stamped "1022 Okla"----- | 1,024.173 |
| T. 9 N., R. 2 E., southeast corner of sec. 19; iron post stamped "1090 Okla"----- | 1,091.332 |
| T. 9 N., R. 1 E., southeast corner of sec. 23; iron post stamped "1123 Okla"----- | 1,124.800 |

From McComb south along Atchison, Topeka & Santa Fe Ry. to Canadian River.

| | |
|--|-----------|
| T. 8 N., R. 2 E., sec. 25, in stone milepost 149; aluminum tablet stamped "968 Adj 1903"----- | 966.668 |
| T. 7 N., R. 2 E., sec. 11, in stone milepost 152; aluminum tablet stamped "1038 Adj 1903"----- | 1,037.548 |
| T. 7 N., R. 2 E., sec. 26, in stone milepost 155; aluminum tablet stamped "977 Adj 1903"----- | 976.404 |
| Trousdale, in front of station; top of rail----- | 967.4 |
| Wanette, 4.5 miles north of, Tps. 6 and 7 N., Rs. 2 and 3 E., near southeast fence corner, in public right of way; iron post stamped "997 Adj 1903"----- | 996.253 |

From T. 9 N., R. 3 E., sec. 16, south to McComb.

| | |
|---|-----------|
| T. 9 N., R. 3 E., 45 feet northeast of the southwest corner of sec. 16, in sand rock; chiseled square marked "U. S. B. M. 1064"----- | 1,062.73 |
| T. 9 N., R. 3 E., 50 feet northwest of southeast corner of sec. 29; iron post stamped "1020 No. 4"----- | 1,018.968 |
| T. 8 N., R. 3 E., 125 feet northeast of southwest corner of sec. 9; iron post stamped "960 No. 5"----- | 958.553 |
| McComb, opposite station; top of south rail, marked "949"----- | 947.5 |
| McComb, 1.0 mile northeast of, T. 8 N., R. 3 E., north side of the Atchison, Topeka & Santa Fe Ry., in right of way, in milepost 146; bronze tablet stamped "981 Adj 1903"----- | 928.968 |

From point 7 miles east of Lexington west 2 miles, thence north along Indian meridian to center of T. 9 N.

| | |
|---|-----------|
| T. 6 N., R. 1 E., southeast corner of sec. 5; iron post stamped "1126 Okla"----- | 1,128.168 |
| T. 6 N., R. 1 E., 45 feet southeast of northwest corner of sec. 7; iron post stamped "1053 No. 6"----- | 1,053.000 |

| | Feet. |
|---|-------------|
| T. 7 N., R. 1 E., 60 feet northeast of southwest corner of sec. 19; iron post stamped "1089 No. 7"----- | 1, 089. 348 |
| T. 7 N., R. 1 W., 50 feet northwest of southeast corner of sec. 1; iron post stamped "1157 No. 8"----- | 1, 157. 471 |
| T. 7 N., R. 1 W., 45 feet southwest of northeast corner of sec. 1, east side of 10-inch black jack tree, in root; nail marked "U. S. B. M. 1261"----- | 1, 261. 23 |
| T. 8 N., R. 1 E., 55 feet northeast of southwest corner of sec. 19; iron post stamped "1133 No. 9"----- | 1, 133. 422 |
| T. 8 N., R. 1 E., 65 feet northeast of southwest corner of sec. 6; iron post stamped "No. 10 1093"----- | 1, 093. 589 |
| T. 9 N., R. 1 W., 55 feet northwest of southeast corner of sec. 13; iron post stamped "1041 No. 12"----- | 1, 041. 301 |

From T. 8 N., R. 1 E., sec. 26, west to Indian meridian.

| | |
|---|-------------|
| T. 8 N., R. 1 E., southeast corner of sec. 26; iron post stamped "1050 Okla"----- | 1, 052. 126 |
|---|-------------|

From T. 9 N., R. 1 E., sec. 23, west to Indian meridian.

| | |
|--|-------------|
| T. 9 N., R. 1 E., southeast corner of sec. 23; iron post stamped "1123 Okla"----- | 1, 124. 801 |
| T. 9 N., R. 1 W., 60 feet northeast of southwest corner of sec. 25; iron post stamped "1010 No. 11"----- | 1, 009. 978 |

McLOUD QUADRANGLE.

[Latitude 35° 15'–35° 30'; longitude 97°–97° 15'.]

North along section line 1 mile east of the line between ranges 1 and 2 E., to northeast corner of sec. 18, T. 10 N., R. 2 E., thence west 2 miles, thence north along section line 1 mile west of same range line, with 2-mile spur lines west and east across range line.

| | |
|---|-------------|
| T. 9 N., R. 1 E., southeast corner of sec. 11; iron post stamped "1113 Okla"----- | 1, 114. 840 |
| T. 9 N., R. 2 E., southeast corner of sec. 7; iron post stamped "1076 Okla"----- | 1, 077. 657 |
| T. 10 N., R. 2 E., southeast corner of sec. 30; iron post stamped "1190 Okla"----- | 1, 191. 054 |
| T. 10 N., R. 1 E., southeast corner of sec. 26; iron post stamped "1096 Okla"----- | 1, 097. 651 |
| T. 10 N., R. 2 E., southeast corner of sec. 7; iron post stamped "1132 Okla"----- | 1, 133. 304 |
| T. 10 N., R. 1 E., southeast corner of sec. 11, sandstone ledge in old road; aluminum tablet stamped "1168 Okla"----- | 1, 169. 352 |
| T. 11 N., R. 1 E., southeast corner of sec. 26; iron post stamped "1116 Okla"----- | 1, 117. 206 |
| T. 11 N., R. 2 E., southeast corner of sec. 30; iron post stamped "1132 Okla"----- | 1, 133. 256 |
| T. 11 N., R. 1 E., southeast corner of sec. 11; iron post stamped "1173 Okla"----- | 1, 174. 294 |
| T. 11 N., R. 2 E., southeast corner of sec. 7; iron post stamped "1147 Okla"----- | 1, 148. 002 |
| T. 12 N., R. 1 E., southeast corner of sec. 26; iron post stamped "1085 Okla"----- | 1, 086. 382 |

From point 8 miles north of McLoud, south 3 miles, thence west to Harrah.

| | Feet. |
|---|------------|
| T. 12 N., R. 2 E., about 40 feet north of corner of secs. 21, 22, 27, and 28, in center of north-south right of way, in base of large tree trunk; nail marked "U. S. B. M. 1131"----- | 1, 131.23 |
| T. 12 N., R. 2 E., of secs. 27, 28, 33, and 34, in corner stone; aluminum tablet stamped "No. 61090"----- | 1, 090.013 |
| T. 12 N., R. 2 E., about 50 feet northwest of corner of secs. 28, 29, 32, and 33, in base of tree trunk; nail marked "U. S. B. M. 1079"----- | 1, 078.76 |
| Harrah, 1.5 miles south by 1.8 miles east of, about 180 feet east of point where Chicago, Rock Island & Pacific Ry. crosses Lincoln-Pottawatomie county line, about 50 feet north of track; iron post stamped "1052 No. 7"----- | 1, 052.055 |
| T. 12 N., R. 1 E., corner of secs. 25, 26, 35, and 36; iron post stamped "1085"----- | 1, 086.382 |

From Harrah west to Choctaw.

| | |
|--|------------|
| Harrah, about 25 feet northwest of north corner of Chicago, Rock Island & Pacific Ry. station, at northwest end of fish plate, on top of south rail; point marked "1072"----- | 1, 071.431 |
| Harrah, 2.0 miles west of, in north-south right of way, about 50 feet south of Rock Island track, about 10 feet west of wagon track, in sandstone ledge; 500 feet west of milepost 468; tablet stamped "1084 No. 8"----- | 1, 083.058 |
| Choctaw, 1.0 mile east of, in Chicago, Rock Island & Pacific Ry. right of way, close to fence, about 65 feet southeast of point where railroad crosses Indian Meridian; iron post stamped "1096 No. 9"----- | 1, 095.409 |

From point near McLoud east and south to T. 9 N., R. 3 E., sec. 16.

| | |
|--|------------|
| T. 11 N., R. 2 E., sec. 17, 45 feet southeast of northwest corner of, east side of oak tree, in root; nail marked "U. S. B. M. 1106"----- | 1, 105.67 |
| McLoud, T. 11 N., R. 2 E., 50 feet northeast of southwest corner of sec. 10; iron post stamped "1083 No. 18"----- | 1, 081.850 |
| T. 11 N., R. 3 E., 50 feet from northwest corner of sec. 18, 3.0 miles east of McLoud; iron post stamped "1078 No. 19"----- | 1, 077.687 |
| T. 11 N., R. 3 E., 60 feet southwest of northeast corner of sec. 30, in sandstone; aluminum tablet stamped "1063 No. 20"----- | 1, 063.362 |
| T. 11 N., R. 3 E., 30 feet southwest of northeast corner of sec. 31, east side of leaning oak tree 2 feet thick, in root; nail marked "U. S. B. M. 1056"----- | 1, 055.86 |
| T. 10 N., R. 3 E., sec. 5, at point where Chicago, Rock Island & Pacific Ry. crosses line between secs. 5 and 6, on east side of railroad and in right of way; iron post stamped "No. 21 1015"----- | 1, 014.963 |
| T. 10 N., R. 3 E., 0.25 mile east of crossing of Chicago, Rock Island & Pacific Ry. and line between secs. 3 and 4, 32 feet south of track, 1,850 feet east of road crossing, 360 feet east of right of way; iron post stamped "1018"----- | 1, 018.418 |
| T. 10 N., R. 3 E., 60 feet south and 20 feet west of crossing of Missouri, Kansas & Texas Ry. and line between secs. 16 and 17; iron post stamped "1008 No. 1"----- | 1, 006.864 |

| | Feet. |
|---|-----------|
| T. 10 N., R. 3 E., 55 feet southeast of northwest corner of sec. 33; iron post stamped "1058 No. 2"----- | 1,057.508 |
| T. 9 N., R. 3 E., 60 feet south of northwest corner of sec. 9, north side of 2-foot post-oak tree, in root; nail marked "U. S. B. M. 1071"----- | 1,070.55 |
| T. 9 N., R. 3 E., 60 feet northwest of southeast corner of sec. 8; iron post stamped "1130 No. 3"----- | 1,129.345 |
| T. 9 N., R. 3 E., 65 feet southeast of northwest corner of sec. 16; iron post stamped "Prim. Trav. Sta. No. 24, 1129 Okla."----- | 1,127.061 |

Along Indian meridian.

| | |
|---|-----------|
| T. 10 N., R. 1 W., 50 feet northwest of southeast corner of sec. 25; iron post stamped "1039 No. 14"----- | 1,039.399 |
| T. 10 N., R. 1 W., northeast corner of sec. 24, east side of 12-inch black-jack tree, in root; nail marked "U. S. B. M. 1131.4"----- | 1,132.01 |
| T. 10 N., R. 1 E., 70 feet northeast of southwest corner of sec. 7; iron post stamped "1167 No. 15"----- | 1,157.843 |
| T. 11 N., R. 1 W., 55 feet northwest of southeast corner of sec. 25; iron post stamped "1189 No. 16"----- | 1,189.517 |
| T. 11 N., crossing of Indian meridian and Missouri, Kansas & Texas Ry., 100 feet northeast of; iron post stamped "1244 No. 17"----- | 1,244.262 |
| T. 11 N., R. 1 W., 45 feet north of southeast corner of sec. 1, east side of 10-inch black-jack tree, in root; nail marked "U. S. B. M. 1228.7"----- | 1,229.35 |
| T. 12 N., R. 1 W., 60 feet northwest of southeast corner of sec. 25; iron post stamped "1180 No. 18"----- | 1,180.240 |
| T. 12 N., crossing of Indian meridian and Chicago, Rock Island & Pacific Ry., 50 feet southwest of; iron post stamped "Prim. Trav. Sta. No. 13, No. 9, 1096"----- | 1,095.409 |

From T. 10 N., R. 1 E., sec. 26, west to Indian meridian.

| | |
|--|-----------|
| T. 10 N., R. 1 E., southeast corner of sec. 26; iron post stamped "1096 Okla."----- | 1,097.651 |
| T. 10 N., R. 1 E., southwest corner of sec. 27, south side of 18-inch post-oak tree, in root; nail marked "U. S. B. M. 1226.4"----- | 1,225.98 |
| T. 10 N., R. 1 W., 50 feet northwest of southeast corner of sec. 25; iron post stamped "No. 1039"----- | 1,039.399 |

From T. 11 N., R. 1 E., sec 7, east to point 4 miles west of McLoud.

| | |
|--|----------|
| T. 11 N., R. 1 E., 40 feet north of southwest corner of sec. 7, west side of 10-inch black-jack tree, in root; nail----- | 1,244.96 |
| T. 11 N., R. 1 E., 40 feet southeast of the northwest corner of sec. 17, north side of 24-inch post-oak tree, in root; nail marked "U. S. B. M. 1187.4"----- | 1,188.00 |

From T. 11 N., R. 2 E., southwest to T. 11 N., R. 1 E., sec. 12.

| | |
|---|----------|
| T. 11 N., R. 1 E., 45 feet southeast of northwest corner of sec. 12, north side of corner post, 18 inches above ground; nail marked "U. S. B. M. 1154.3"----- | 1,153.74 |
|---|----------|

MOORE QUADRANGLE.

[Latitude 35° 15'-35° 30'; longitude 97° 15'-97° 30'.]

From point 8 miles north of Norman northwest along Atchison, Topeka & Santa Fe Ry. to point near Flynn.

| | Feet. |
|--|-------------|
| T. 9 N., R. 3 W., crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 12 and 13, 100 feet east and 30 feet north of; iron post stamped "1156 Okla., No. 31"----- | 1, 154. 782 |
| T. 10 N., R. 3 W., crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 26 and 35, 70 feet west and 30 feet south of; iron post stamped "1193 Okla., No. 30"----- | 1, 192. 233 |
| T. 10 N., R. 3 W., crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 14 and 23, 120 feet east and 30 feet south of; iron post stamped "1237 Okla., No. 29"----- | 1, 235. 600 |
| Moore, in front of north end of station; top of rail----- | 1, 244. 0 |
| T. 10 N., R. 3 W., crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 2 and 35, 60 feet southeast of; iron post stamped "1296 Okla., No. 28"----- | 1, 295. 436 |
| Flynn, in front of station; top of rail----- | 1, 280. 0 |
| T. 11 N., R. 3 W., crossing of Atchison, Topeka & Santa Fe Ry. and line between secs. 23 and 26, 70 feet west and 30 feet south of; iron post stamped "1276 Okla., No. 27"----- | 1, 275. 190 |

From Choctaw west along Chicago, Rock Island & Pacific Ry. to Oklahoma.

| | |
|--|-------------|
| Choctaw, opposite station; top of north rail----- | 1, 105. 0 |
| T. 12 N., R. 1 W., crossing of line between secs. 27 and 28, 100 feet south and 30 feet west of; iron post stamped "1141 No. 19"----- | 1, 140. 115 |
| T. 12 N., R. 2 W., crossing of east line of sec. 25, 60 feet southwest of; iron post stamped "1228 No. 20"----- | 1, 227. 199 |
| Dickson, in front of station; top of rail----- | 1, 216. 0 |
| Dickson, T. 12 N., R. 2 W., crossing of half-section line in sec. 26; iron post stamped "1215 No. 21"----- | 1, 214. 339 |
| T. 12 N., R. 2 W., crossing of line between secs. 26 and 27, 60 feet southeast of; iron post stamped "Prim. Trav. Sta. No. 11, 1202 Okla."----- | 1, 201. 910 |
| T. 12 N., R. 2 W., crossing of line between secs. 27 and 28, 90 feet southeast of; iron post stamped "No. 22, 1181"----- | 1, 180. 572 |
| T. 12 N., R. 2 W., crossing of north-south half-section line in sec. 32, 80 feet southeast of; iron post stamped "1160 No. 23"----- | 1, 159. 542 |
| T. 11 N., R. 3 W., crossing of Chicago, Rock Island & Pacific Ry. and line between secs. 1 and 2, 65 feet northwest of; iron post stamped "1169 No. 24"----- | 1, 168. 079 |

Near Indian meridian.

| | |
|---|-------------|
| T. 9 N., R. 1 W., 60 feet northeast of southwest corner of sec. 1; iron post stamped "1128 No. 13"----- | 1, 128. 365 |
| T. 10 N., R. 1 W., 45 feet southwest of northeast corner of sec. 35, east side of corner post, 6 inches above ground; nail marked "U. S. B. M. 1059.7"----- | 1, 060. 26 |

From center of T. 9 N. north along line between ranges 1 and 2 west to Chicago, Rock Island & Pacific Ry. in T. 12 N.

| | |
|---|-------------|
| T. 9 N., R. 2 W., 50 feet northwest of southeast corner of sec. 1; iron post stamped "1060 Okla. No. 39"----- | 1, 060. 157 |
| T. 10 N., R. 1 W., 60 feet northeast of southwest corner of sec. 19; iron post stamped "1127 Okla. No. 40"----- | 1, 127. 076 |

Feet.

| | |
|--|-------------|
| T. 10 N., R. 2 W., 50 feet northwest of southeast corner of sec. 12; iron post stamped "1143 Okla No. 41"----- | 1, 143. 139 |
| T. 11 N., R. 1 W., 55 feet northeast of southwest corner of sec. 31; iron post stamped "No. 42 1242 Okla"----- | 1, 241. 895 |
| T. 11 N., R. 2 W., 50 feet southwest of northeast corner of sec. 25; iron post stamped "1303 Okla No. 43"----- | 1, 302. 638 |
| T. 11 N., R. 1 W., crossing of Missouri, Kansas & Texas Ry. and line between secs. 7 and 12, 80 feet northeast of; iron post stamped "1267 Okla No. 44"----- | 1, 267. 478 |
| T. 11 N., R. 1 W., 60 feet northeast of southwest corner of sec. 6, north side of black-jack tree, in root; nail marked "U. S. B. M. 1258.5"----- | 1, 254. 56 |
| T. 12 N., R. 2 W., 55 feet northwest of southeast corner of sec. 36; iron post stamped "1267 No. 45 Okla"----- | 1, 267. 236 |

NORMAN QUADRANGLE.

[Latitude 35°-35° 15'; longitude 97° 15'-97° 30'.]

From Purcell northwest along Atchison, Topeka & Santa Fe Ry. to point 3
miles north of Norman.

| | |
|---|-------------|
| Purcell, in front of new railroad station; top of rail----- | 1, 028.8 |
| Purcell, U. S. Courthouse, in first course of stone above basement, second stone from southwest corner, middle of south face; bronze tablet stamped "1092 Okla"----- | 1, 093. 615 |
| Canadian River, railroad bridge over, east side of south pier; north- east rivet on bridge plate----- | 1, 059. 4 |
| Noble, in front of station; top of rail----- | 1, 174. 5 |
| Norman, in front of station; top of rail----- | 1, 166. 4 |
| Norman, State Bank, left side of entrance, northeast corner, second stone above sidewalk; bronze tablet stamped "1170 Okla"----- | 1, 172. 124 |
| Norman, T. 9 N., R. 2 W., sec. 30, crossing of Atchison, Topeka & Santa Fe Ry. and half-section line, 50 feet northwest of; iron post stamped "No. 32 1173 Okla"----- | 1, 173. 488 |

From Purcell east to Indian meridian.

| | |
|---|-------------|
| Lexington, southwest corner of school yard; iron post stamped "1083 Okla"----- | 1, 084. 948 |
| T. 6 N., R. 1 W., southeast corner of sec. 3; iron post stamped "1111 Okla"----- | 1, 112. 844 |

From Norman east to Indian meridian and north near Indian meridian.

| | |
|---|-------------|
| T. 9 N., R. 2 W., crossing of Atchison, Topeka & Santa Fe Ry. and south line of sec. 32, 50 feet northwest of; iron post stamped "1152 Okla. No. 33"----- | 1, 152. 092 |
| T. 8 N., R. 2 W., 50 feet southwest of northeast corner of sec. 3; iron post stamped "1188 Okla. No. 34"----- | 1, 188. 254 |
| T. 8 N., R. 1 W., 45 feet southeast of northwest corner of sec. 6; iron post stamped "1076 Okla. No. 35"----- | 1, 077. 622 |
| T. 8 N., R. 1 W., 50 feet southwest of northeast corner of sec. 5; iron post stamped "1043 Okla. No. 36"----- | 1, 043. 241 |
| T. 9 N., R. 1 W., 60 feet northwest of southeast corner of sec. 33; iron post stamped "1037 Okla. No. 37"----- | 1, 036. 846 |
| T. 9 N., R. 1 W., 300 feet north of southwest corner of sec. 36, west side of 10-inch black-jack tree, in root; nail marked "U. S. B. M. 1106.1"----- | 1, 106. 86 |

| | Feet. |
|--|-----------|
| T. 9 N., R. 1 W., 60 feet northwest of southwest corner of sec. 25; iron post stamped "1010 No. 11"----- | 1,009.978 |
| T. 9 N., R. 1 W., quarter corner east side of sec. 23, west of road, 150 yards south of hill top, in east side of tree; nail----- | 1,114.58 |
| T. 9 N., R. 1 W., 75 feet south of northeast corner of sec. 23, on east side of 12-inch post-oak tree, in stump; nail marked "U. S. B. M. 1144"----- | 1,144.41 |

From T. 8 N., Rs. 1 and 2 W., north along range line to center of T. 9 N.

| | |
|---|-----------|
| T. 8 N., R. 1 W., 45 feet southeast of northwest corner of sec. 6; iron post stamped "1078 Okla No. 35"----- | 1,077.622 |
| T. 9 N., R. 2 W., 100 feet west and 30 feet south of northeast corner of sec. 24; iron post stamped "1148 Okla No. 38"----- | 1,148.263 |

Along township and section lines.

| | |
|--|-----------|
| Tps. 7 and 8 N., Rs. 2 and 3 W., corner of; iron post----- | 1,138.607 |
| Canadian River, meander corner on, between T. 7 N., R. 2 W., sec. 4, and T. 8 N., R. 2 W., sec. 33; iron post----- | 1,065.947 |
| Canadian River, meander corner on, between T. 6 N., R. 2 W., sec. 1, and T. 7 N., R. 2 W., sec. 36; iron post----- | 1,031.067 |
| Tps. 6 and 7 N., Rs. 2 and 3 W., corner of; iron post----- | 1,125.977 |

Platte National Park.

[Latitude 34° 29'-34° 31'; longitude 96° 56'-96° 59']

MURRAY COUNTY.

These elevations are based upon the 1912 adjustment of precise leveling through old Indian Territory levels. The initial point is an iron post at the standard corner T. 1 N., Rs. 3 and 4 E., and the elevation accepted is taken from Bulletin No. 175, page 111, plus a correction of 2.0 feet.

Leveling in 1908 by B. A. Jenkins.

From corner of T. 1 N., Rs. 3 and 4 E., west through Buffalo and Antelope Springs to Bromide Springs and return.

| | Feet. |
|---|-----------|
| T. 1 N., Rs. 3 and 4 E., standard corner; iron post----- | 1,200.234 |
| Platte National Park, 400 feet south of entrance, in sandstone ledge; aluminum tablet stamped "976-1908"----- | 975.977 |
| Pavilion Springs, southern spring, in top of hood over; aluminum tablet stamped "1908-2-940"----- | 940.151 |
| Platte National Park, 200 feet north of office, in granite slab in ground; aluminum tablet stamped "1908-6-963," slab marked "U. S. B. M. 962.3"----- | 963.783 |
| Platte National Park, 400 feet southeast of superintendent's office on summit of hill, in ledge; aluminum tablet stamped "1011-1908"----- | 1,011.515 |
| Bromide Springs, at south end of footbridge over Rock Creek, in cement seat; aluminum tablet stamped "1908-5-929"----- | 929.318 |
| Antelope Springs, 20 feet south of, in sandstone ledge; aluminum tablet stamped "1080-1908"----- | 1,080.250 |

APPENDIX A.

ELEVATIONS ADJUSTED BY THE COAST AND GEODETIC SURVEY FROM PRECISE LEVELING.

Addington, Arapaho, Chickasha, Enid, Erick, Hobart, Ingersoll, Kingfisher, Montague, Pond Creek, Rush Springs, and Watonga quadrangles.

CANADIAN, GARFIELD, GRADY, GRANT, JEFFERSON, KINGFISHER, AND STEPHENS COUNTIES.

The following descriptions and elevations are taken from reports of the Coast and Geodetic Survey and are republished by permission of the superintendent of that bureau. The bench marks were established by the Coast and Geodetic Survey from precise leveling and were included in the 1912 adjustment by that bureau. The elevations are likely to be changed only slightly by any future adjustment.

ADDINGTON QUADRANGLE.

[Latitude 34°-34° 30'; longitude 97° 30'-98°.]

From point near Ryan along Chicago, Rock Island & Pacific Ry. to point
near Duncan.

| | Feet. |
|---|-----------|
| Ryan, 1 mile north of, on bridge 3212 over Beaver Creek, in east side of south abutment, 6 inches from east and north edges of stone; copper bolt (C. & G. S. b. m. C)----- | 827.000 |
| Sugden, 500 feet north of railroad station, east side of track, in angle of right-of-way fence and fence crossing the track, 4 feet from each fence and 45 feet from nearest rail of main track, in top of marble post; bottom of square hole, lettered "U. S. B. M." (C. & G. S. b. m. D)----- | 847.803 |
| Addington, near, in angle formed by east right-of-way fence of railroad and first fence crossing railroad track south of station, 200 feet east of track, in top of marble post; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. E)----- | 909.989 |
| Addington, 3.5 miles north of, on east side of north abutment of culvert just south of mile pole 490, in first step below coping stone, 6 inches from either edge; copper bolt (C. & G. S. b. m. F)----- | 930.500 |
| Comanche, 1.5 miles south of mile pole 486, on east side of north abutment of bridge 3187, 12 inches from east and south edges of stone; bottom of square hole (C. & G. S. b. m. G)----- | 967.852 |
| Comanche, in stone building owned by J. S. Minton, in second stone column west of entrance to part of building occupied by the owner, 4 feet above sidewalk; copper bolt (C. & G. S. b. m. H)----- | 988.777 |
| Comanche, 4 miles north of, in coping of railway culvert, 7 telegraph poles north of mile pole 481, on west side of track, in northwest corner of coping, 6 inches from either edge; copper bolt (C. & G. S. b. m. I)----- | 1,016.573 |

| | Feet. |
|--|-------------|
| Duncan, in northeast corner of pier supporting the railway water tower on south and east side, 4 inches from either edge, in lower tier; copper bolt (C. & G. S. b. m. J)----- | 1, 126. 455 |

ARAPAHO QUADRANGLE.

[Latitude 35° 30'-36°; longitude 98° 30'-99°.]

From point near Hydro west along Chicago, Rock Island & Pacific Ry. to point near Parkersburg.

| | |
|---|-------------|
| Hydro, on south end of west concrete pier of plate-girder bridge No. 5526 over Deer Creek; copper bolt (C. & G. S. b. m. M ₁)----- | 1, 469. 105 |
| Hydro, on southwest corner of red sandstone building at northeast corner of Main and Caddo streets, occupied in 1909 by the post office, set horizontally facing Main Street, 0.3 meter above concrete sidewalk; red metal disk (C. & G. S. b. m. N ₁)----- | 1, 557. 480 |
| Hydro, 55 meters west of west end of station, 4 meters north of center line of main track, near west end of gravel platform of station; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. O ₁)----- | 1, 489. 026 |
| Hydro, 2.2 miles west of, on north end of west concrete abutment of plate girder bridge No. 5568 over Deer Creek; copper bolt (C. & G. S. b. m. P ₁)----- | 1, 497. 631 |
| Weatherford, 2.8 miles east of, 14.3 meters south of center line of main track, directly opposite milepost 560, 400 feet west of west end of pile trestle bridge No. 5599; red metal disk on top of iron post (C. & G. S. b. m. Q ₁)----- | 1, 566. 608 |
| Weatherford, 44.9 meters west of west end of station, 6.9 meters north of center line of main track, near Broadway crossing; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. R ₁)----- | 1, 645. 909 |
| Weatherford, at southwest corner of Broadway and Main streets, in stone foundation of brick building occupied in 1909 by the First National Bank of Weatherford, 0.4 meter above sidewalk; red metal disk (C. & G. S. b. m. S ₁)----- | 1, 659. 596 |
| Weatherford, 2.6 miles west of, near middle of fourth curve west of Weatherford station, 3.5 meters below top of rail, in center of north spandrel wall of a reinforced concrete culvert; copper bolt (C. & G. S. b. m. T ₁)----- | 1, 694. 029 |
| Weatherford, 3.4 miles west of, on south end of east concrete abutment of plate girder bridge No. 5662; copper bolt (C. & G. S. b. m. U ₁)-- | 1, 723. 668 |
| Weatherford, 4.8 miles west of, on top of cut on divide between South Canadian and Washita rivers, 10½ poles east of milepole 568, 14 meters southwest of center line of main track, just inside of right of way; top of red metal cap on iron post (C. & G. S. b. m. V ₁)----- | 1, 799. 294 |
| Indianapolis, 2 miles east of, 13.4 meters south of center line of main track, on west line of north-south highway at crossing on curve, 4 poles west of milepole 571; top of red metal cap on iron post (C. & G. S. b. m. W ₁)----- | 1, 678. 015 |
| Indianapolis, nearly opposite large grain elevator, just inside of right of way, 44 meters southeast of a point on center line of main track, 33 meters northeast of center of temporary railroad station; top of red metal cap on iron post (C. & G. S. b. m. X ₁)----- | 1, 666. 172 |

Feet.

| | |
|---|-------------|
| I ndianapolis, 3.8 miles west of, 650 feet southwest of pile trestle No. 5768 over Turtle Creek, 32 meters northwest of center line of main track, on north line of east-west highway at crossing near milepole 577; top of red metal cap on iron post (C. & G. S. b. m. Y ₁)----- | 1, 530. 049 |
| C linton, 1.4 miles northeast of, 0.5 mile east of crossing of St. Louis & San Francisco R. R. and Chicago, Rock Island & Pacific Ry., on south end of bridge seat of east concrete abutment of one-span steel bridge of latter railway over Washita River; red metal disk (C. & G. S. b. m. Z ₁)----- | 1, 490. 374 |
| C linton, directly opposite north end of passenger station, 8.4 meters east of center line of main track; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. A ₁)----- | 1, 517. 175 |
| C linton, at southwest corner of Frisco Avenue and Fifth Street, in first stone above the Frisco Avenue sidewalk, on west end of brick and stone building of C. G. Welch; red metal disk (C. & G. S. b. m. B ₁)----- | 1, 535. 492 |
| C linton, near corner of Choctaw Avenue and Sixth Street, on west corner of southwest concrete pier supporting one of the four steel columns of city water tower; copper bolt (C. & G. S. b. m. C ₁)----- | 1, 566. 283 |
| C linton, 1 mile north of, on face of north concrete abutment of plate girder bridge on which the Kansas City, Mexico & Orient Ry. crosses the Chicago, Rock Island & Pacific Ry., 1 meter above tracks and 2 meters from east face of abutment; copper bolt (C. & G. S. b. m. D ₁)----- | 1, 496. 417 |

CHICKASHA QUADRANGLE.

[Latitude 35°-35° 30'; longitude 97° 30'-98°.]

From point near Minnehah along Chicago, Rock Island & Pacific Ry. to point near El Reno.

| | |
|---|-------------|
| C hickasha, in top step of eastern entrance to First National Bank building, 12 inches from north end of step and 5 inches from iron grating; copper bolt (C. & G. S. b. m. Q)----- | 1, 092. 728 |
| C hickasha, 0.8 mile north of, on southwest corner of north abutment of bridge 3164, 4 inches from west and 12 inches from south edge of stone; bottom of square hole (C. & G. S. b. m. R)----- | 1, 090. 034 |
| C hickasha, 2.5 miles north of, on northeast corner of south abutment of bridge over Washita River, 6 inches from north and east edges of stone; bottom of square hole (C. & G. S. b. m. S)----- | 1, 089. 093 |
| C hickasha, 4 miles north of; iron rail on end, used as a marker for mile pole 432 (C. & G. S. t. b. m. 114)----- | 1, 101. 379 |
| M inco, 3 miles south of, in sec. 8, T. 9 N., R. 7 W., on property of Kit Carson, of Minco, on old trail or road from Minco to Chickasha, on highest point of bold ridge, 0.8 mile west of Chicago, Rock Island & Pacific Ry.; bench mark is 1 decimeter west of triangulation, between the U and the S; triangulation station marked by point of spike projecting from pipe filled with concrete covered with one-half inch of cement; bench mark is bottom of square hole cut in cement near station mark (C. & G. S. Carson A)----- | 1, 429. 455 |
| M inco, on southeast corner of northeast pier supporting central part of railway water tank, 3 inches from either edge; bottom of square hole (C. & G. S. b. m. T)----- | 1, 297. 009 |
| M inco, north side of Bank of Minco, on water table to double window, 4 inches from west end; bottom of square hole (C. & G. S. b. m. U)----- | 1, 300. 857 |

| | Feet. |
|---|------------|
| Union, in angle of fence, about 1,000 feet north of station, 70 feet east of track, in top of limestone post; bottom of square hole marked "U. S. \square B. M." (C. & G. S. b. m. A)----- | 1, 334.879 |
| El Reno, 5 miles south of, on land of G. L. Newman, 1.2 kilometers east of track of Chicago, Rock Island & Pacific Ry., at triangulation station El Reno East Base; center of bronze tablet (C. & G. S. El Reno E. B. Δ)----- | 1, 443.721 |
| El Reno, 7 miles southwest of, on land of J. T. Seawell, at triangulation station El Reno West Base; center of bronze tablet (C. & G. S. El Reno W. B. Δ)----- | 1, 531.441 |

KINGFISHER QUADRANGLE.

[Latitude 35° 30'-36° ; longitude 97° 30'-98°.]

From point near El Reno along Chicago, Rock Island & Pacific Ry. to Dover.

| | |
|---|------------|
| El Reno, across tracks from and in line with south end of railroad station; top of section of iron rail in ground (C. & G. S. t. b. m. 142)----- | 1, 365.404 |
| El Reno, on north side of Minneapolis Threshing Machine Co.'s building, which is close to railroad track and 0.25 mile north of Chicago, Rock Island & Pacific Ry. station, on west side of doorstep to office entrance; bottom of square hole (C. & G. S. b. m. B)----- | 1, 360.188 |
| El Reno, on Bickford Avenue between Hays and Woodson Streets, on a building with a galvanized iron front painted and sanded to represent white stone, facing east with a drug store occupying the north room (1902); center of iron step in stairway (C. & G. S. b. m. City El Reno)----- | 1, 357.589 |

At Fort Reno.

| | |
|--|------------|
| Fort Reno, 0.5 mile southwest of station, at northwest corner of Fort Reno settlement, on southwest corner of southwest stone base supporting one of the steel columns of high steel water tank; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. A)----- | 1, 395.502 |
|--|------------|

From El Reno north along Chicago, Rock Island & Pacific Ry. to point near Hennessey.

| | |
|--|------------|
| El Reno, across tracks from and in line with south end of railroad station; top of section of iron rail in ground (C. & G. S. t. b. m. 142)----- | 1, 365.404 |
| El Reno, on north side of Minneapolis Threshing Machine Co.'s building, which is close to railroad track and 0.25 mile north of railway station, on west doorstep to office entrance; bottom of square hole (C. & G. S. b. m. B)----- | 1, 360.188 |
| El Reno, Bickford Avenue between Hays and Woodson streets, on a building with a galvanized-iron front, painted and sanded to represent white stone, facing east, with a drug store occupying the north room (1902); center of iron step in stairway (C. & G. S. b. m. "City El Reno")----- | 1, 357.589 |
| Darlington, in southeast corner of northeast pier supporting central part of railway water tank; bottom of square hole (C. & G. S. b. m. C)----- | 1, 330.434 |

| | Feet. |
|---|-------------|
| Caddo, 0.5 mile north of, on top of section of iron rail in ground used as a marker for mile pole 396 (C. & G. S. t. b. m. 148)----- | 1, 306. 158 |
| Okarche, 6 telegraph poles north of station and 3½ poles south of mile pole 388, in an angle of fence, 30 feet west from and 6 feet above tracks; bottom of square cut in top of stone post, marked "U. S. □ B. M." (C. & G. S. b. m. D)----- | 1, 239. 239 |
| Kingfisher, on northeast corner of southeast pier supporting central part of water tank; bottom of square hole (C. & G. S. b. m. E)----- | 1, 053. 029 |
| Kingfisher, on south corner of iron shoe plate upon concrete on which rests south iron column supporting standpipe to city water plant; square bounded by edges of plate and two chisel marks (C. & G. S. b. m. F)----- | 1, 057. 370 |
| Kingfisher, on east side of Kingfisher National Bank, on sill of third window from corner, 8 inches from south edge of sill; bottom of square hole (C. & G. S. b. m. G)----- | 1, 056. 389 |
| Dover, on southwest corner of base stone to northwest pier supporting the outer part of the railway water tank; bottom of square hole (C. & G. S. b. m. H)----- | 1, 033. 909 |

MONTAGUE QUADRANGLE.

[Latitude 33° 30'–34°; longitude 97° 30'–98°.]

From Terral along Chicago, Rock Island & Pacific Ry. to point near Ryan.

| | |
|--|----------|
| Terral, in northwest corner of southeast pier supporting the railway water tank, 5 inches from either edge; copper bolt (C. & G. S. b. m. A)----- | 846. 822 |
| Terral, 5 miles north of, in west side of stone culvert of Chicago, Rock Island & Pacific Ry., south of mile pole 514, 25 feet west by 20 feet below railroad track; copper bolt (C. & G. S. b. m. B)----- | 831. 035 |

ENID QUADRANGLE.

[Latitude 36° 30'–37°; longitude 97° 30'–98°.]

From point near Hennessey north along Chicago, Rock Island & Pacific Ry. to point near Kremlin.

| | |
|--|-------------|
| Hennessey, on northeast corner of southeast pier supporting central part of railway water tank; bottom of square hole (C. & G. S. b. m. I)----- | 1, 162. 196 |
| Hennessey, on S. N. Bree's (1901) brick building near corner of Main Street and Oklahoma Avenue, near base of iron column at left of entrance; center of square formed by edges of base plate and two chisel marks (C. & G. S. b. m. J)----- | 1, 162. 600 |
| Bison, between sixth and seventh telegraph poles north of station, 10 feet from seventh pole and one pole south of switch stand; bottom of square hole in top of stone post marked "U. S. □ B. M." (C. & G. S. b. m. K)----- | 1, 240. 164 |
| Waukomis, in large brick public-school building on west side, in northwest corner pilaster, 9 inches from corner and 4 feet above ground, in center of brick; copper bolt (C. & G. S. b. m. L)----- | 1, 264. 180 |
| Waukomis, 0.5 mile northwest of, in sec. 23, T. 21 N., R. 7 W., on property of J. Crick, 100 meters northwest of his dwelling; bottom of square hole in top of cement-filled pipe (C. & G. S. triangulation station "Waukomis")----- | |

| | Feet. |
|--|-------------|
| Waukomis, 0.5 mile northwest of, 210.050 meters east of Waukomis triangulation station, in northeast corner of J. Crick's garden near public road; flat part of concrete near projecting point of spike used as a reference mark for Waukomis triangulation station (C. & G. S. "Waukomis E")----- | 1, 261. 828 |
| Enid, 1,600 feet north of station, in northeast corner of south concrete abutment to bridge (1902), 9 inches from the east and north edges of concrete; copper bolt (C. & G. S. b. m. M)----- | 1, 237. 436 |
| Enid, at eastern entrance to First National Bank on Broadway Street, on north end of lowest step, 4 inches from north column to arch of doorway and 5 inches above sidewalk; bottom of square hole (C. & G. S. b. m. N)----- | 1, 247. 179 |
| North Enid, on southeast corner of foundation stone of east one of outer supports on south side of railway water tank; bottom of square hole (C. & G. S. b. m. O)----- | 1, 249. 928 |
| North Enid, 2 miles north by 2.5 miles east of, in sec. 22, T. 23 N., R. 6 W., on a prominent ridge, in line of fence on south side of road (the northern boundary of property of Mr. Smith), 76 meters from corner of secs. 14, 15, 22, and 23; the bench mark is 5 inches north of triangulation station mark and is marked by the head of a nail driven flush with bottom of square in top of cement-filled pipe (C. & G. S. "Enid A")----- | 1, 263. 360 |

ERICK QUADRANGLE.

[Latitude 35°-35° 30'; longitude 99° 30'-100°.]

From point near Merritt southwesterly along Chicago, Rock Island & Pacific Ry. to Texola.

| | |
|--|-------------|
| Merritt, directly opposite temporary station, 42 meters north of center line of main track, just east of gate to private road; bottom of square hole in top of limestone post, marked "U. S. B. M." (C. & G. S. b. m. T ₁)----- | 2, 051. 242 |
| Doxey, on south side of one of the stone piers supporting columns of the railway water tank (this pier is west one of second row from track); bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. U ₁)----- | 1, 837. 995 |
| Doxey, 18.1 meters east of east end of railway station, 10.7 meters north of center line of main track; top of red metal cap on iron post (C. & G. S. b. m. V ₁)----- | 1, 837. 513 |
| Sayre, 1.2 miles east of station, on east line of north-south road at crossing, 0.5 meter south of center line of main track; top of red metal cap on iron post (C. & G. S. b. m. W ₁)----- | 1, 839. 606 |
| Sayre, 0.7 mile east of station, in center of top of south spandrel wall of small concrete culvert; copper bolt (C. & G. S. b. m. X ₁)----- | 1, 818. 963 |
| Sayre, at southwest corner of Main and Fourth streets, 1 decimeter above Main Street sidewalk, on base stone near center of north face of Thurmond Block, the corner room of which is occupied by the First State Bank; red metal disk set horizontally facing Main Street (C. & G. S. b. m. Y ₁)----- | 1, 807. 106 |
| Sayre, just west of railway dining house, directly across from coal chutes at station, 45 meters south of center line of main track, on south fence line of east-west road; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. Z ₁)----- | 1, 810. 577 |

| | Feet. |
|---|-------------|
| Sayre, 4.1 miles west of station, 4 poles west of milepole 631, near private road crossing, the west end of first considerable sandy cut west of Cane Mill spur, 15 meters north of center line of track; top of red metal cap on iron post (C. & G. S. b. m. A.)----- | 1, 844. 845 |
| Hext Ranch, 45 meters north of center line of main track, 115 meters west of northwest property corner at road crossing near cotton gin; top of red metal cap on iron post (C. & G. S. b. m. B.)----- | 1, 930. 534 |
| Erick, 2 miles east of, just inside right of way at east end of a sandy cut, 1 pole west of milepole 639, 14 meters north of center line of main track; top of red metal cap on iron post (C. & G. S. b. m. C.)-- | 2, 024. 521 |
| Erick, at corner of Main and Broadway streets, on east face of First State Bank Building, in base stone to left of corner entrance, 1 decimeter above sidewalk; red metal disk (C. & G. S. b. m. D.)-- | 2, 061. 400 |
| Erick, 130 meters west of ticket office in station, 75 meters west of Main Street crossing, 12.8 meters north of center line of main track, in line with telegraph poles; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. E.)----- | 2, 061. 453 |
| Erick, 2.6 miles west of, 14 meters north of center line of main track, at northwest intersection at highway crossing, just inside of right of way; red metal cap on iron post (C. & G. S. b. m. F.)----- | 2, 022. 086 |
| Texola, 650 feet east of ticket office in railway station, 315 feet east of road crossing, 10.9 meters north of center line of main track, in line with telegraph poles and just west of section house; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. G.)----- | 2, 147. 342 |
| Texola, on east end of concrete foundation of railway station, 1.15 meters from southeast corner of building, 0.25 meter above ground and 1.2 meters below top of window sill; red metal disk (C. & G. S. b. m. H.)----- | 2, 151. 423 |

HOBART QUADRANGLE.

[Latitude 35°-35° 30'; longitude 99°-99° 30'.]

From point near Parkersburg southwest along Chicago, Rock Island & Pacific Ry. to point near Merritt.

| | |
|--|-------------|
| Clinton, 3 miles west of, just inside right of way, 12 meters north of center line of main track, 110 meters west of private road crossing at top of grade; red metal cap on iron post (C. & G. S. b. m. E.)-- | 1, 547. 382 |
| Parkersburg, 2 miles northeast of, on southeast one of stone supports for the columns of railroad water tank; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. F.)----- | 1, 544. 872 |
| Parkersburg, 135 meters west of temporary railroad station, 17 meters south of center line of main track, at west end of a cut, on edge of a swamp; top of red metal cap on iron post (C. & G. S. b. m. G.)-- | 1, 524. 725 |
| Parkersburg, 5.7 miles west of, one pole east of milepole 591, at Alfalfa spur of Chicago, Rock Island & Pacific Ry., just inside road line near railroad property corner, near north-south road crossing, 14 meters south of center line of main track at east-west road crossing; top of red metal cap on iron post (C. & G. S. b. m. H.)----- | 1, 578. 208 |
| Foss, 100 meters east of station, 8 meters south of center line of main track, 45 meters east of Adams Street crossing, in front of Foss Mill & Elevator Co.'s buildings; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. I.)----- | 1, 625. 669 |

Feet.

| | |
|--|-----------|
| Foss, at northwest corner of Adams and Main streets, slightly above sidewalk, on projecting basement stone at southwest corner of brick building of Foss Mercantile Co.; bottom of square hole marked "U. S. B. M." (C. & G. S. b. m. J ₁)----- | 1,640.896 |
| Foss, on northeast corner of east one of two stone piers nearest track which support the columns of railroad water tank, near west end of passenger station; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. K ₁)----- | 1,628.559 |
| Foss, 3.7 miles west of, just inside right of way, 2 poles west of mile-pole 598, west end of cut on third curve west of Foss, 14 meters south of center line of main track; top of red metal cap on iron post (C. & G. S. b. m. L ₁)----- | 1,758.152 |
| Canute, just inside right of way east of section house, nearly opposite east end of railroad station, 45 meters north of center line of main track; top of red metal cap on iron post (C. & G. S. b. m. M ₁)----- | 1,903.244 |
| Canute, 3.4 miles west of, on base of southeast one of four central stone piers supporting wooden columns of water tank; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. N ₁)----- | 1,944.484 |
| Elk City, 1.6 miles east of, near fence line on east side of road, at crossing 1 mile west of Washita-Beckham county-line road, 15 meters south of center line of main track; top of red metal cap on iron post (C. & G. S. b. m. O ₁)----- | 1,942.864 |
| Elk City, on right of way, 43.6 meters east of east corner of railroad station and 17 meters southeast of center line of main track; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. P ₁)----- | 1,914.265 |
| Elk City, at southeast corner of Broadway and Main streets, on left side of corner entrance to Thurmond Building, occupied by First State Bank, 0.7 meter above sidewalk; red metal disk (C. & G. S. b. m. Q ₁)----- | 1,926.295 |
| Elk City, at northwest corner of Jefferson and Broadway streets, on stone window sill near sidewalk level, on south side of building occupied by German State Bank; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. R ₁)----- | 1,931.098 |
| Elk City, 5 miles southwest of, just inside right of way, at northwest corner of road crossing, at highest point of railroad between El Reno and Sayre, 14 meters north of center line of main track; top of red metal cap on top of iron post (C. & G. S. b. m. S ₁)----- | 2,092.246 |

INGERSOLL QUADRANGLE.

[Latitude 36° 30'-37°; longitude 98°-98° 30'.]

At Manchester.

| | |
|---|-----------|
| Manchester, in north face of Odd Fellows Hall, in center of brick column at northeast corner, in fifteenth tier above stone foundation; copper bolt (C. & G. S. b. m. Y)----- | 1,288.521 |
|---|-----------|

POND CREEK QUADRANGLE.

[Latitude 36° 30'-37°; longitude 97° 30'-98°.]

From point near Kremlin north along Chicago, Rock Island & Pacific Ry. and northwest along Atchison, Topeka & Santa Fe Ry. to point near Manchester.

| | |
|---|-----------|
| Kremlin, 12 feet south of sixth telegraph pole north of station; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. P)----- | 1,120.949 |
|---|-----------|

| | Feet. |
|---|-----------|
| Pond Creek, on stone doorstep of schoolhouse (1895), 4 inches from eastern side of arch to south doorway and 2 inches from edge of stone; bottom of square hole (C. & G. S. b. m. Q)----- | 1,050.382 |
| Jefferson, 0.5 mile south of, on northwest corner of southwest foundation stone supporting the column to central part of railway water tank; bottom of square hole (C. & G. S. b. m. R)----- | 1,047.898 |
| Medford, in southeast angle formed by the Chicago, Rock Island & Pacific Ry. and the Atchison, Topeka & Santa Fe Ry., 60 feet from each track; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. S)----- | 1,087.265 |
| Medford, in east face of brick school building, 4 feet above ground, near center of third brick from northeast corner; copper bolt (C. & G. S. b. m. T)----- | 1,099.312 |
| Medford, on southwest corner of east one of outer supports on north side of Atchison, Topeka & Santa Fe Ry. water tank; bottom of square hole (C. & G. S. b. m. U)----- | 1,099.164 |
| Clyde, 10 feet west of third telegraph pole east of and across tracks from Atchison, Topeka & Santa Fe Ry. station; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. V)----- | 1,113.249 |
| Wakita, on south face of east column of Masonic Hall, on Main Street, in middle brick in seventeenth tier from sidewalk; copper bolt (C. & G. S. b. m. W)----- | 1,181.963 |
| Gibbon, 2 poles east of and across tracks from station sign, 10 feet west of second telegraph pole west of milepole 305; bottom of square hole in top of stone post, marked "U. S. \square B. M." (C. & G. S. b. m. X)----- | 1,183.056 |

RUSH SPRINGS QUADRANGLE.

[Latitude 34° 30'–35°; longitude 97° 30'–98°.]

From point near Duncan along Chicago, Rock Island & Pacific Ry. to point near Minnehah.

| | |
|---|-----------|
| Duncan, 1.5 miles south by 5 miles west of, in sec. 16, T. 1 S., R. 8 W., on top of high flat hill with woods on east and north; spike projecting from pipe filled with concrete covered with one-half inch of cement; bench mark is bottom of square hole cut in cement near station mark (C. & G. S. triangulation station Duncan)----- | 1,224.384 |
| Check bench mark is iron spike 10 inches long driven flush with ground 6 decimeters from east leg of inner tripod and in line with leg and station mark, 0.0271 meter below bench mark (Duncan Δ).. | 1,224.295 |
| Marlow, 2.5 miles south of, 1.5 telegraph poles north of mile pole 468, on 2½-foot iron pipe culvert, 10 feet below tracks, 20 feet from rail on east end of pipe; cross on highest point. (C. & G. S. b. m. K)----- | 1,298.049 |
| Marlow, on east side of First National Bank building, 6 inches from south end of water table to double window; square 1 inch on a side (C. & G. S. b. m. L)----- | 1,313.849 |
| Marlow, southwest corner of Fifth Street and Brummett Avenue, in northeast corner of public school lot, on concrete pier (red sandstone and Portland cement), used by E. Smith in 1899 for longitude observations; the longitude station is marked by bronze station mark; bench mark is cross marking station (C. & G. S. Marlow Longitude Station)----- | 1,312.432 |

| | Feet. |
|--|-------------|
| Marlow, 4.5 miles north of, in coping stone to east side of an arched stone culvert, 6 inches from south and east edges of stone; copper bolt (C. & G. S. b. m. M)----- | 1, 268. 973 |
| Rush Springs, in northwest pier of center set of supports to railway water tank; bottom of square hole (C. & G. S. b. m. N)----- | 1, 292. 107 |
| Ninnekah, 6 miles south of, at siding No. 2, on top of section of iron rail used as a marker for mile pole 449 (C. & G. S. t. b. m. 95)----- | 1, 258. 258 |
| Ninnekah, 4 miles south of, on coping stone to culvert, 4½ telegraph poles north of mile pole 447½, on west side of track, 4 inches from west edge and 28 inches from south edge of stone; bottom of square hole (C. & G. S. b. m. O)----- | 1, 225. 030 |
| Ninnekah, 0.5 mile north of, bridge over Little Washita River, on west side of south abutment, in bridge seat, 6 inches from north edge and 30 inches from west edge of stone; copper bolt (C. & G. S. b. m. P)----- | 1, 076. 422 |

WATONGA QUADRANGLE.

[Latitude 35° 30'-36°; longitude 98°-98° 30']

From point near Fort Reno west along Chicago, Rock Island & Pacific Ry. to point near Hydro.

| | |
|---|-------------|
| Calumet, 100 meters west of station, 19 meters north of center line of main track, on top of north retaining wall of concrete which supports the roadway leading into the elevator of the Farmer's Grain Co.; copper bolt (C. & G. S. b. m. B ₁)----- | 1, 376. 508 |
| Calumet, 7.5 miles west of, 180 feet west of small timber bridge No. 5305, 1½ poles west of pole 530-15, on west line of highway at crossing, 13.5 meters south of center line of main track; red metal cap on iron pipe (C. & G. S. b. m. C ₂)----- | 1, 444. 341 |
| Geary, 70 meters west of west end of station, near west end of triangular plat on which the railroad water tank stands, 4.9 meters north of center line of main track; bottom of square hole in top of stone post, marked "U. S. B. M." (C. & G. S. b. m. D ₂)----- | 1, 540. 115 |
| Geary, on low stone window sill on west side of north or main face of Geary Opera House; bottom of square hole, marked "U. S. B. M." (C. & G. S. b. m. E ₂)----- | 1, 549. 901 |
| Geary, on projecting foundation stone at northwest corner of north or main entrance to Geary public-school building; bottom of square hole marked "U. S. B. M." (C. & G. S. b. m. F ₂)----- | 1, 583. 409 |
| Geary, on east corner of northeast concrete foundation supporting one of the steel columns of city water tank; copper bolt (C. & G. S. b. m. G ₂)----- | 1, 590. 391 |
| Geary, 3.5 miles south of, 75 meters south of south end of railway pile trestle 5385, at entrance to cut, 15 meters west of center line of main track; red metal cap on top of iron post (C. & G. S. b. m. H ₂)----- | 1, 430. 315 |
| Geary, 7.25 miles southwest of, on west end of north concrete retaining wall supporting embankment at end of steel bridge over South Canadian River; red metal disk (C. & G. S. b. m. I ₂)----- | 1, 407. 452 |
| Bridgeport, 240 meters east of station, 41.5 meters south of center line of main track, on east property line of the extension of Main Street; red metal disk on top of iron post (C. & G. S. b. m. J ₂)----- | 1, 425. 840 |

| | Feet. |
|--|-------------|
| t, 2.5 miles west of, 400 feet west of west end of railway pile | |
| 5459, 550 feet west of highway crossing, directly opposite | |
| t 546, 18 meters south of center line of main track; red | |
| disk on top of iron post (C. & G. S. b. m. K _s)----- | 1, 428. 904 |
| 5.9 meters south of center line of main track, 180 meters | |
| temporary station, just outside right of way at southwest | |
| y corner at highway crossing; red metal disk on top of iron | |
| . & G. S. b. m. L _s)----- | 1, 444. 423 |
| 99°—Bull. 564—14—8 | |

APPENDIX B.

SECONDARY ELEVATIONS.

Secondary elevations from records and topographic maps of the United States Geological Survey, including altitudes of well-known summits and other useful elevations, are given below. These elevations are approximate only and should not be used for accurate work.

| Locality. | Quadrangle. | County. | Elevation. |
|--|------------------|-------------------|------------|
| Antlers..... | Antlers..... | Pushmataha..... | 500 |
| Bluejacket..... | Vinita..... | Craig..... | 774 |
| Catoosa..... | Claremore..... | Rogers..... | 617 |
| Chelsea..... | Vinita..... | Rogers..... | 715 |
| Choteau..... | Pryor..... | Mayes..... | 625 |
| Claremore, junction of St. Louis & San Francisco B. R. and St. Louis, Iron Mountain & Southern Ry..... | Claremore..... | Rogers..... | 611 |
| Coyle..... | Perkins..... | Logan..... | 871 |
| Fort Gibson..... | Muskogee..... | Muskogee..... | 516 |
| Inola..... | Claremore..... | Rogers..... | 600 |
| Kosoma..... | Antlers..... | Pushmataha..... | 493 |
| Langston..... | Perkins..... | Logan..... | 962 |
| Marietta..... | Gainesville..... | Lore..... | 846 |
| Maud..... | Maud..... | Pottawatomie..... | 968 |
| Muskogee..... | Muskogee..... | Muskogee..... | 809 |
| Nowata..... | Nowata..... | Nowata..... | 694 |
| Perkins..... | Perkins..... | Payne..... | 891 |
| Pryor..... | Pryor..... | Mayes..... | 625 |
| Stillwell..... | Tahlequah..... | Adair..... | 1,106 |
| Talala..... | Nowata..... | Rogers..... | 683 |
| Tulsa..... | Claremore..... | Tulsa..... | 696 |
| Vinita..... | Vinita..... | Craig..... | 696 |

INDEX.

| A. | | Page. | C. | | Page. |
|---|-----------------------|---------|--|----------------------------|----------|
| Adair..... | | 15 | Caddo..... | | 45, 107 |
| Adair County..... | | 17 | Caldwell, H. L., work of..... | | 56, 63 |
| Addington..... | | 42, 103 | Calumet..... | | 112 |
| quadrangle..... | 42-43, 54-55, 103-104 | | Calvin..... | | 33 |
| Afton..... | | 8 | Cameron..... | | 25 |
| Agra..... | | 81, 82 | Canadian County..... | 38, 54, 88, 92, 103 | |
| quadrangle..... | 41, 81-82 | | Canadian quadrangle..... | | 22 |
| Albion..... | | 29 | Caney..... | | 45 |
| Alderson..... | | 31 | Canute..... | | 110 |
| Alikehi quadrangle..... | | 48 | Carlock, J. H., work of..... | | 16, |
| Antlers..... | | 47 | 17, 24, 26, 35, 43, 44, 50, 51, 52 | | |
| quadrangle..... | 46-48 | | Carnall, R. T., work of..... | 42, 43, 46, 52 | |
| Appalachia..... | | 68 | Carney..... | | 82, 92 |
| Arapaho quadrangle..... | 104-106 | | Carter County..... | | 43 |
| Ardmore..... | | 43 | Casey..... | | 72 |
| quadrangle..... | 43-44 | | Cashion..... | | 90, 91 |
| Arlington..... | | 85 | Caston..... | | 27 |
| Armstrong..... | | 45 | Catchings, T. C., work of..... | | 31, 32 |
| Arthur, Tex..... | | 50 | Catoosa..... | | 13 |
| Asher..... | | 35 | Cavanal..... | | 27 |
| Atchison, Topeka & Santa Fe Ry..... | 40, | | Chandler..... | | 82, 83 |
| 70, 71, 73, 74, 76, 79, 81, 82, 83, 84, 86, | | | quadrangle..... | 41, 82-84 | |
| 87, 88, 90, 91, 93, 96, 100, 101, 110, 111 | | | Chelsea..... | | 9 |
| Atoka..... | | 45 | Cherokee..... | | 25 |
| County..... | 45, 46 | | County..... | 17, 18 | |
| quadrangle..... | 45-46 | | Chicago, Rock Island & Pacific Ry..... | 37, | |
| Avoca..... | | 85 | 38, 42, 53, 73, 82, 87, 89, 90, 91, 92, 98, 99, 100, | | |
| Aydelotte..... | | 87 | 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, | | |
| B. | | | Chickasaw Nation..... | 37, 38, 39, 42, 43 | |
| Baker, H. L., work of..... | 37, 42, 43, 51 | | Chickasha..... | 38, 105 | |
| Barnett..... | | 31 | quadrangle..... | 38-40, 56, 105-106 | |
| Barren..... | | 17 | Chili..... | | 33 |
| Bartlesville..... | | 57 | Choctaw..... | 93, 95, 98, 100 | |
| Bartlett, G. H., work of..... | 27, 29, 48, 49 | | County..... | 46, 48, 50, 51 | |
| Bellemont..... | | 87 | Choctaw, Oklahoma & Gulf R. R..... | 21, | |
| Bench marks, description of..... | 5-6 | | 27, 29, 31, 40, 81, 88, 90 | | |
| plate showing..... | 5 | | Choteau..... | | 14 |
| Bengal..... | | 29 | Chuckaho..... | | 83 |
| Berwyn..... | | 44 | Claremore..... | | 12, 13 |
| Big Cabin..... | 9, 15 | | quadrangle..... | 12-14, 63 | |
| Bigheart..... | | 58 | Clarksville quadrangle..... | | 60 |
| Bison..... | | 107 | Clayton..... | | 29 |
| Blackland..... | | 62 | Cleveland..... | | 66 |
| <i>See also Foster.</i> | | | County..... | | 92 |
| Blackstone..... | | 18 | Clinton..... | | 105, 109 |
| Bluejacket..... | | 9 | Clyde..... | | 111 |
| Bonham quadrangle..... | 51-52 | | Coal County..... | | 32 |
| Braggs..... | | 19 | Coalgate..... | | 33 |
| Bridgeport..... | 112, 113 | | quadrangle..... | 32-34 | |
| Bryan County..... | 45, 51 | | Coast and Geodetic Survey, elevations ad- | | |
| Buffalo..... | | 102 | justed by..... | 108-113 | |
| Bunch..... | | 17 | Cody..... | | 72 |
| Burbank..... | | 80 | Coe, Robert, work of..... | 9, 14, 15, 17, 18, 24, 27, | |
| Butler..... | 31, 47 | | 29, 32, 35, 37, 38, 42, 43, 45, 46, 52, 53, 88, 92, 98 | | |
| | | | Colbert..... | | 51, 52 |

| | Page. |
|-------------------------------|---------|
| Comanche..... | 42, 103 |
| Compton..... | 29 |
| Copeland, R. M., work of..... | 56, 63 |
| Correll, W. A., work of..... | 20, 31 |
| Correta..... | 19 |
| Coyle..... | 89, 91 |
| Craig County..... | 9 |
| Creek County..... | 42, 62 |
| Cushing..... | 81, 84 |

D.

| | |
|------------------------------|-------------------|
| Dale..... | 40, 88 |
| Darlington..... | 106 |
| Datum, determination of..... | 6-7 |
| Davenport..... | 47, 82, 83, 86 |
| Davis..... | 35 |
| Deer Creek..... | 74 |
| Delaware County..... | 7, 15 |
| Denison quadrangle..... | 52 |
| De Queen quadrangle..... | 49 |
| Dickson..... | 100 |
| Doster, Chase, work of..... | 29, 31 |
| Dougherty..... | 44 |
| Dover..... | 106, 107 |
| Doxey..... | 108 |
| Dudley..... | 92 |
| Duncan..... | 37, 103, 104, 111 |
| Durant..... | 51 |
| Dutcher..... | 88, 91 |

E.

| | |
|----------------------------|--------------|
| Earle, W. E., work of..... | 7, 9, 14, 15 |
| Earlsboro..... | 40, 88 |
| Eastern Oklahoma R. R..... | 82 |
| Edmond..... | 93 |
| Edmond quadrangle..... | 93 |
| Elgin..... | 61 |
| Elk City..... | 110 |
| El Reno..... | 90, 105, 106 |
| El Reno Junction..... | 90 |
| Elzey..... | 29 |
| Enid..... | 108 |
| Enid quadrangle..... | 107-108 |
| Erick..... | 109 |
| Erick quadrangle..... | 108-109 |
| Esau Junction..... | 72 |
| Eufaula..... | 22 |

F.

| | |
|--------------------------------|---|
| Fairfax..... | 80, 81 |
| Faison, E. L., work of..... | 17, 18, 20, 21, 22, 24, 29, 31, 32, 40, 41, 81 |
| Fallis..... | 92, 94 |
| Fanshawe..... | 27 |
| Fellows, F. E., work of..... | 27, 29, 31, 32, 46, 48, 49 |
| Fisher..... | 64 |
| Flynn..... | 40, 100 |
| Folsom..... | 28 |
| Foraker..... | 62, 78, 79 |
| Fort Gibson..... | 19 |
| Fort Reno..... | 90, 106, 112 |
| Fort Smith & Western R. R..... | 83, 86, 89, 94 |
| Fort Smith quadrangle..... | 26 |
| Foss..... | 109, 110 |
| Foster..... | 59, 60, 62 |
| Frink..... | 31 |
| Fry, E. M., work of..... | 18, 20, 21, 24, 26, 27, 29, 34, 35, 37, 38, 42, 43 |

G.

| | Page. |
|-----------------------------------|-----------------|
| Gainesville quadrangle..... | 52-53 |
| Gans..... | 24 |
| Garfield County..... | 103 |
| Garvin County..... | 35, 37 |
| Geary..... | 112 |
| Gibson..... | 111 |
| Gibson..... | 13 |
| Glen, G., work of..... | 35 |
| Goodland..... | 47 |
| Goodnight..... | 91, 92 |
| Grady County..... | 37, 38, 54, 103 |
| Grant..... | 51 |
| Grant County..... | 62, 103 |
| Greenup..... | 72 |
| Gulf, Colorado & Santa Fe Ry..... | 35, 43 |
| Guthrie..... | 88, 89 |
| Guthrie quadrangle..... | 88-89 |

H.

| | |
|---------------------------------|---|
| Hallett..... | 71, 73 |
| Halliday, W. P., work of..... | 26, 27, 29, 46, 48, 49, 50 |
| Hamden..... | 47 |
| Hannegan, D., work of..... | 17 |
| Hanson..... | 25 |
| Harrah..... | 94, 98 |
| Hartshorne..... | 31 |
| Haskell County..... | 23, 24 |
| Hassan, A. F., work of..... | 7, 9, 10, 12, 14, 18, 20, 21, 35, 43, 52 |
| Heavener..... | 28 |
| Hellen, H. H., work of..... | 17, 18 |
| Hennessey..... | 106, 107 |
| Hext Ranch..... | 109 |
| Hickman, C. H., work of..... | 24 |
| Hill, E. W., work of..... | 9, 14, 15 |
| Hobart quadrangle..... | 109-110 |
| Holdenville..... | 21 |
| Hominy..... | 62, 67 |
| Hominy quadrangle..... | 42, 64-70 |
| Horatio quadrangle..... | 50 |
| Houston..... | 28 |
| Hughes County..... | 21 |
| Hutchinson, F. M., work of..... | 38, 92, 93 |
| Hutchinson..... | 73, 74 |
| Hydro..... | 104, 112 |

I.

| | |
|---------------------------|----------|
| Iconium..... | 92 |
| Illinois..... | 19 |
| Indian..... | 67 |
| Indianapolis..... | 104, 105 |
| Ingersoll quadrangle..... | 110 |
| Inola..... | 12 |

J.

| | |
|------------------------------|-----------------|
| Jefferson..... | 111 |
| Jefferson County..... | 42, 53, 54, 103 |
| Jenkins, B. A., work of..... | 102 |
| Jennings..... | 70, 71 |
| Jobes siding..... | 71 |
| Johnston County..... | 44 |
| Jones, Oscar, work of..... | 43, 49, 50 |

K.

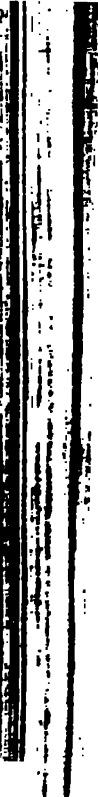
| | |
|--------------------------------------|--------------------|
| Kansas City, Mexico & Orient Ry..... | 105 |
| Kansas City Southern Ry..... | 15, 17, 21, 27, 28 |
| Kaw..... | 79, 80 |
| Kay County..... | 63 |

| | Page. | | Page. |
|--|----------------------------|--|-------------------------------|
| Kelso..... | 9 | Midlothian..... | 81 |
| Kendrick..... | 82 | Mimoo..... | 38, 105 |
| Keystone..... | 64, 67 | Missouri, Kansas & Texas Ry..... | 9, |
| Kiamichi..... | 29 | 10, 18, 19, 22, 31, 33, 45, 51, 57, 58, 62, 66, | |
| King, E. T., work of..... | 34, 63, 81, 88, 93 | 67, 68, 70, 71, 73, 81, 92, 94, 95, 98, 99, 101 | |
| King, J. W., work of..... | 88, 92 | Montague quadrangle..... | 53-54, 107 |
| Kingfisher..... | 80, 107 | Moore, W. S. D., work of..... | 10, 12, 14, 15, |
| County..... | 88, 103 | 17, 18, 20, 21, 22, 23, 29, 31, 32, 34, 35, 37, 40 | |
| quadrangle..... | 89-91, 106-107 | Moore..... | 100 |
| Kiowa..... | 31 | quadrangle..... | 100-101 |
| Kosoma..... | 47 | Muldrow, H. L., jr., work of..... | 7, |
| Krebs..... | 31 | 14, 15, 17, 18, 31, 32, 34, 44, 45 | |
| Kremlin..... | 107, 110 | Muldrow..... | 25 |
| L. | | Murray County..... | 43, 102 |
| Latimer County..... | 20 | Muskogee..... | 18 |
| Le Flore..... | 28 | County..... | 18, 20 |
| County..... | 24, 26, 27 | quadrangle..... | 18-20 |
| Lehigh..... | 45 | N. | |
| Lellaetta..... | 14 | Nardin..... | 74, 75 |
| Lenoir..... | 51 | Navina..... | 80, 90, 91 |
| Lexington..... | 96, 101 | Nelagoney..... | 57, 58, 59 |
| Limestone Gap..... | 31 | Newkirk..... | 76, 79 |
| Lincoln County..... | 41, 81, 88, 92 | quadrangle..... | 74-76 |
| Lindsay, W. A., work of..... | 54 | New Taneha..... | 65 |
| Lockridge..... | 89 | Nichols siding..... | 58 |
| Logan County..... | 88, 92 | Nick, George, work of..... | 7, 10, 15, 18, 22, 23 |
| Lonsdale, E. H., work of..... | 20, 21 | Nimnekah..... | 37, 105, 112 |
| Lost City..... | 64 | Noble..... | 101 |
| Love County..... | 43, 52 | Norfolk..... | 70 |
| Lowe..... | 82, 92 | Norman..... | 100, 101 |
| Lukfata quadrangle..... | 48-49 | quadrangle..... | 101-102 |
| Luther..... | 94, 95 | North Creek..... | 83 |
| quadrangle..... | 94, 95 | North End..... | 108 |
| M. | | Nowata..... | 11 |
| McAlester..... | 22, 31 | County..... | 10 |
| quadrangle..... | 31-32 | quadrangle..... | 10 |
| McClain County..... | 35, 92 | Numa..... | 73, 74 |
| McCluer, H. C., work of..... | 27, 29, 31, 46, 50, 51, 52 | Nuyaka quadrangle..... | 21 |
| McComb..... | 85, 96 | O. | |
| quadrangle..... | 95-97 | Oak Lodge..... | 25 |
| McCool..... | 113 | Odell, C. B., work of..... | 9, 10, 12, 14, 18, 20, 21, 42 |
| McCurtain County..... | 48, 49, 50 | Okarche..... | 107 |
| McIntosh County..... | 22 | Okesa..... | 57 |
| McLoud..... | 94, 98 | Okfuskee County..... | 21 |
| quadrangle..... | 97-99 | Oklahoma..... | 90 |
| McKey..... | 25 | County..... | 88, 92 |
| McKinley..... | 83, 94 | Okmulgee quadrangle..... | 20 |
| Mallon quadrangle..... | 41, 84 | Oktaha..... | 18 |
| Manchester..... | 110 | Oologah..... | 13 |
| Mannford..... | 64, 66 | Osage..... | 66, 67 |
| Manning, W. R., work of..... | 21, | County..... | 12, 56, 62 |
| 22, 32, 34, 35, 37, 40, 41, 44, 45, 51, 52 | | Ottawa County..... | 7 |
| Maps of quadrangles, list of..... | 7 | Overbrook..... | 43 |
| Marble..... | 17 | P. | |
| Marietta..... | 53 | Page..... | 27, 28 |
| Marlow..... | 37, 111, 112 | Panola..... | 29 |
| Marshall County..... | 44, 52 | Paoli..... | 36 |
| Maud quadrangle..... | 40, 85 | Paris quadrangle..... | 51 |
| Mayes County..... | 14 | Parry, H. G., work of..... | 56 |
| Medford..... | 73, 111 | Parkersburg..... | 104, 109 |
| Meeker..... | 83, 84, 87 | Pauls Valley..... | 36 |
| Merrick..... | 92 | quadrangle..... | 35-36 |
| Merritt..... | 108, 109 | Pawhuska..... | 59, 60 |
| Mervine siding..... | 79 | quadrangle..... | 56-62 |
| Midland Valley R. R..... | 57, 58, 59, 63, 60 | | |

| | Page. | | Page. |
|---|--------------------|--------------------------------|-----------------|
| Pawnee County..... | 41, 62 | Sallisaw..... | 24, 25 |
| Pawnee quadrangle..... | 41, 70-73 | quadrangle..... | 24-25 |
| Payne County..... | 41, 62, 81 | Sansbois quadrangle..... | 22-24 |
| Payson..... | 83 | Sapulpa..... | 42, 65 |
| Peck..... | 45 | Sayre..... | 108, 109 |
| Peckham..... | 75 | Secondary elevations..... | 114 |
| Perkins..... | 81, 92 | Seminole..... | 11 |
| quadrangle..... | 91-92 | County..... | 40 |
| Perry..... | 14 | quadrangle..... | 40-41 |
| Personnel..... | 5 | Sequoyah County..... | 16, 17, 24 |
| Phelan, J. P., work of..... | 14, 18, 24 | Seward..... | 88, 91 |
| Piedmont..... | 90 | Sewall..... | 85 |
| Pitts, S. C., work of..... | 15 | Shady Point..... | 25 |
| Pittsburg County..... | 22, 31, 32 | Shawnee..... | 40, 87, 88 |
| Platte National Park..... | 102 | quadrangle..... | 40, 87-88 |
| Pleasant Valley..... | 88 | Shawneetown quadrangle..... | 49 |
| Pocahontas..... | 27 | Siloam Springs quadrangle..... | 15-16 |
| Ponca..... | 84 | Skedee..... | 71, 72 |
| Pond Creek..... | 111 | Skiatook..... | 63, 69 |
| quadrangle..... | 73-74, 110-111 | South Canadian..... | 22 |
| Pontotoc County..... | 34 | South Keokuk..... | 86 |
| Poteau..... | 25 | South McAlester..... | 31 |
| Poteau Mountain quadrangle..... | 26-27 | Sparks..... | 83, 84, 86 |
| Pottawatomie County..... | 40, 81, 92 | Sperry..... | 63 |
| Prague..... | 85, 86, 87 | Stanley..... | 29 |
| quadrangle..... | 40, 85 | Stephens County..... | 37, 42, 54, 103 |
| Price..... | 64 | Stillwell..... | 17 |
| Prue..... | 67, 68 | Stonewall quadrangle..... | 34 |
| Pryor quadrangle..... | 14-15 | Stringtown..... | 45 |
| Publication, previous..... | 5 | Stroud..... | 84, 86 |
| Purcell..... | 101 | Stuart..... | 32, 33 |
| Purinton, G. A., work of..... | 18, | Sugden..... | 42, 103 |
| 22, 23, 24, 27, 29, 31, 32, 45 | | Summit..... | 18 |
| Pushmataha County..... | 29, 46, 48 | | |
| | | T. | |
| R. | | Tablequah quadrangle..... | 17-18 |
| Ralston..... | 71, 81 | Talala..... | 11 |
| Reams..... | 22 | Talihina..... | 29 |
| Redland..... | 24 | Taneha..... | 65 |
| Redoak..... | 29 | Taylor..... | 89 |
| Red Fork..... | 42 | Tecumseh..... | 85, 87 |
| Reeding..... | 89, 90 | Terlton..... | 64 |
| Remington..... | 80 | Terral..... | 53, 107 |
| Rhyne, V. T., work of..... | 48 | Texola..... | 108, 109 |
| Richland..... | 90 | Thayer, J. P., work of..... | 10, 12, 37 |
| Ripley..... | 70 | Thomasville..... | 28 |
| Rodney..... | 47 | Tidwell, H. M., work of..... | 16, 17 |
| Rogers County..... | 12 | Tishomingo quadrangle..... | 44-45 |
| Romulus..... | 85 | Trousdale..... | 96 |
| Rush Springs..... | 37, 112 | Tryon..... | 82 |
| quadrangle..... | 37-38, 55, 111-112 | Tulsa..... | 13, 63 |
| Russell..... | 88 | County..... | 12, 42, 62 |
| Ryan..... | 42, 53, 103, 107 | Turley..... | 63 |
| | | Tuskahoma..... | 29 |
| S. | | quadrangle..... | 29-30 |
| Sac and Fox..... | 86 | | |
| 15' quadrangle..... | 85-87 | U. | |
| quadrangle..... | 41 | Uncas..... | 79 |
| Sageeyah..... | 13 | Union..... | 106 |
| St. Louis & San Francisco R. R..... | 8, | | |
| 9, 13, 25, 27, 29, 31, 42, 47, 50, 51, | | V. | |
| 63, 64, 66, 71, 72, 82, 83, 89, 92, 105 | | Valley Station..... | 72 |
| St. Louis, El Reno & Western Ry..... | 83, 89, 90, 91 | Vian..... | 25 |
| St. Louis, Iron Mountain & Southern Ry..... | 11, | Vinita..... | 9 |
| 12, 13, 19, 25 | | quadrangle..... | 9-10 |
| | | Voorhees, D., work of..... | 24 |

| W. | Page. | | Page. |
|------------------------------------|------------|-------------------------------|------------|
| Wadena..... | 47 | Wewoka..... | 21, 40 |
| Wagoner..... | 19 | quadrangle..... | 21-23 |
| County..... | 12, 18, 20 | Wilburton..... | 30 |
| Wakita..... | 111 | Wilzetta..... | 86 |
| Walker, J. P., work of..... | 17, | Winding Stair quadrangle..... | 27-29 |
| 18, 22, 23, 24, 32, 34, 37, 42, 53 | | Winslow quadrangle..... | 16 |
| Wanette..... | 35, 96 | Wister..... | 27 |
| Warwick..... | 83, 94 | Wyandotte..... | 8 |
| Washington County..... | 10 | quadrangle..... | 7-8 |
| Washunga quadrangle..... | 76-81 | Wybark..... | 18 |
| Waterloo..... | 93 | Wynnewood..... | 35 |
| Watonga quadrangle..... | 112-113 | Wynona..... | 53, 59, 62 |
| Waukomis..... | 107, 108 | | |
| Weatherford..... | 104 | Y..... | |
| Wellston..... | 94 | Yale..... | 70 |
| West Tulsa..... | 63, 64 | Yukon..... | 90 |
| Westville..... | 17 | | |









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